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A Season Among Italian Bees.

[Several years ago, Professor Mona, of Italy, undertook to establish an apiary for the purpose of rearing Italian queen bees to supply the foreign demand for them, which sprung up after the Italian bees were introduced into Germany, and their superior value became known and appreciated. The business which he thus originated prospered beyond expectation, and soon rendered it necessary that he should procure a competent assistant. He accordingly engaged the services of Mr. Uhle, a practical apiarian of great intelligence and experience, who joined him at Faido, in the spring of 1866, after the apiaries had been removed to Faido, in the canton of Tessin. At the close of the year, Mr. Uhle sent a communication to the *German Bienenzeitung*, from which the following extracts are taken.]

Having from personal observation satisfied myself of the superiority of the Italian bees, having read the various articles contained in the *Bienenzeitung* exhibiting their great value and importance, as also the excellent treatise on "the Italian Bee," published by Mr. Kleine, I came here in April last with intensified expectations.

Professor Mona had given up his school to devote himself exclusively to bee culture, and taken up his abode at his paternal home in Faido, though his bees still remained, for the most part, in the neighborhood of Pollegio.

Since the 1st of March, the business of supplying orders by sending out full colonies, driven swarms and single queens, had been recommenced; and now rapidly increased, as the weather grew milder and the roads improved.

The excursions, which I had occasion to make to his different apiaries, enabled me to obtain a comprehensive view of Prof. Mona's arrangements and modes of operating. There were in all about three hundred stocks, with which the active campaign was opened on the 1st of May. Among these were large as well as small movable comb hives, common log hives or "gums," such as are used in the rural districts, and ordinary box hives of various shapes and sizes. The former were similar to those with which I was familiar in Germany; the others did not impress me favorably, though the exceeding industry of their inmates soon reconciled me to their appearance.

The movable comb hives were deprived of their queens in the course of the month. The larger ones were then used as store stocks for the accumulation of honey, and the smaller ones for rearing queens. From the log hives we drew our supplies of bees in larger or smaller quantities, according to circumstances, to form colonies which were either sent off immediately or placed temporarily in movable comb hives. We also formed a great number of artificial colonies for queen-raising in small nucleus hives. For these the colonies from which the queens sold were taken, furnished the bees, old log hives supplied the combs and brood, and stocks previously deprived of their queens provided the royal cells.

Pasturage being abundant, the log hives from which swarm had been expelled, or which had swarmed naturally, sent forth second swarms in due time. The larger of these were placed in boxes (medium sized) made of thin boards, and speedily became excellent store stocks. The smaller were placed in movable comb hives, and used for rearing queens.

By the beginning of June all the queens of the previous year had been sent off to supply orders, and swarming was, for the most part, over. The queenless log hives were now broken up and the others duly pruned; and at the same time the large movable comb stocks, now again provided with fertile queens, were properly arranged for the storing of honey—strengthening them where necessary with brood from other hives, and limiting the brooding space by the insertion of dividing boards. Thus prepared, they were next transported to some of the higher Alpine villages where the season of pasturage did not open till the middle of June. In a few weeks they were filled with the most delicious honey, transparent and highly aromatic. So abundantly was it gathered that we were able to remove surplus boxes frequently, and numerous fine combs from the body of the hives. Pasturage continued to abound till towards the end of July, when the weather in those elevated districts became rough, and the honey yielded was of inferior quality, greatly discolored and ropy. We then at once removed our colonies once more to the valley below ; removed the queens and nearly all the honey ; used a large part of the bees to supply full stocks desired by customers abroad ; made strong colonies of the remainder, to which queen cells were given ; and in August they were carried to the buckwheat and heath districts. The smaller movable comb stocks, which had repeatedly been deprived of their queens in the course of the summer, were now so united as to form populous colonies, and carried likewise to the buckwheat districts. The log hive stocks, both young and old, even such as had been unqueened a second time in July, were uncommonly heavy, and made excellent store stocks.

Though we had largely multiplied colonies, and repeatedly divided the larger stocks, the sales had been so extensive that we had only about one hundred and fifty hives remaining in the fall. Professor Mona was thus constrained to purchase fresh supplies from the bee-keepers in the valley, and did this on so large a scale that we were able to winter nearly six hundred stocks, after supplying all the orders received late in the fall.

These annually repeated purchases cause an accumulation of the most variously constructed hives in our apiary. Here are log hives or gums, such as are met with in all parts of Germany ; cubic boxes made of thick boards or thin, as chance may offer, rudely nailed together ; wine casks and beer barrels, cut through at the bung, so that this constitutes a semi-circular entrance for the bees ; hollow trunks or limbs of trees ; cylindrical hives made of linden bark ; and inverted tubs or bucket-shaped vessels made by the cooper—in short, receptacles of every imaginable shape, size, and material. All this is a matter of entire indifference to us, provided the hives or substitutes for hives contain young queens, plenty of bees, and an ample supply of honey. Nor need we feel much concerned to find them made of even the thinnest material, as the temperature here is exceedingly mild on the average in winter, the thermometer rarely falling to zero. Hence we readily make room for them at the side of our movable comb hives, for the strengthening of which they are, indeed, chiefly designed.

Early in spring the bees of some of the log hives containing irregularly built combs, are either sent off with the first ordered queens, or transferred to the movable comb hives. The others are reserved to yield one or two swarms; to supply us with one or more queens in the course of the summer, in case we need them ; and occasionally to furnish surplus bees to reinforce other colonies. Besides which they yield us a quantity of honey, larger or smaller, in the fall—thus fully subserving their natural design. Of the other description of hives we make various other uses. Thus we place the stronger afterswarms in light, medium-sized box hives, to have them in readiness to be sent off to purchasers early in spring.

For rearing queens and securing the superior quality of mountain and Alpine honey, we use the movable comb hives, of which we have three forms, all of the same width—27 centimeters, namely. The larger class hives, which can receive twenty-four frames nineteen centimeters high, supply us with honey in the comb, and serve also to receive in the fall the contents of several nucleus hives, used for rearing queens. The second class, containing ten frames twenty-eight centimeters high, serve to accommodate temporarily colonies driven out of log hives and intended for transportation to supply orders. We also use them to supply surplus boxes with honey, having to that end perforated the tops with slits four lines wide to give the bees access to the surplus boxes. We have thus a brooding space which may be enlarged or diminished, according to circumstances, and a removable honey chamber. The surplus honey thus procured is always in demand, finding ready sale at fair prices. In addition to these we have a supply of small hives, fitted to receive six or eight frames nineteen centimeters high, which are used for rearing queens from May to September.

When making the above-mentioned purchases of hives in the neighborhood, I had an opportunity to observe how bee-keeping was conducted in other quarters, and to acquire a knowledge of the system pursued by the Tessinian cultivators, if their processes may be designated by that term. The owner sets his hives either in the balcony of his dwelling house or in some special structure, but invariably exposes their fronts to the scorching rays of the noonday sun, for he contends that thus only can swarms duly *ripen*. Thus placed, he subsequently leaves them without supervision or interference to the instincts of nature. At the swarming season he will examine the trees and bushes around, generally in the evening when returning from the field ; and if he chances to espy a swarm clustered somewhere, he will manage to hold over it a hive internally besmeared with honey, and seek to drive the bees into it with smoke. If a swarm is discovered in the morning, the whole day is not unfrequently wasted in hiving the new acquisition ! And why not ? since this is all the trouble his bees give him ! When a swarm is once hived and set on its stand, he gives himself no further concern about it. When he sees that the bees fly out and in, he is content, and has no idea of doing anything more for them. Still in saying so, I may be slightly wrong. When we come to buy some of his stocks, he will lift the *prime swarms*, because he gives them the preference as being store stocks, but as for the *contents*, he never gives them a thought. He knows that he saw the swarm hanging on the tree ; he hived it himself, and long experience has taught him that prime swarms are invariably the best store stocks ! Afterswarms, he will tell you, do not always prosper ; and old stocks are apt to become a prey for worms. Hence these are not by him deemed fit for store stocks, or are to be used as such only in case of dire necessity. That the worms usually destroy only queenless colonies is a matter beyond his comprehension, who has never seen a queen ! Of course these crude notions are no disadvantage to us, since the result is that we always obtain young queens. Still, with all his ignorance in this respect, the poor bee-keeper does not fare so ill as might be supposed, since the Italian bees commonly supercede their old queens in due time, and rear young ones seasonably Hence the destruction of stocks in consequence of the superannuation of queens, is not so common an occurrence with him as might be supposed.

In many districts peculiar prejudices prevail. Some refuse to sell their supernumerary stocks, conceiving that they would at the same time convey their *luck* to the purchaser. They prefer dooming them to the brimstone pit, and thus harvest the honey in a good or a bad condition as it may happen. But since Professor Mona has commenced buying bees here, superstitious notions and prejudices are beginning to give way, because a handful of francs is an argument agreeably persuasive and powerfully convincing. More generally prevalent is the persuasion that a swarm accidentally found or one obtained by barter, is more certain to prosper than one bought with money. Whether a *stolen* hive comes within the same category in their estimation, I am unable to say. Many, likewise, are under the impression that any wrong they do will react on their bees ; and it is fairly presumable that those bee-keepers who cherish this faith, are not the worst class of citizens. It is furthermore the universal belief that when a bee-keeper dies, his hives will gradually go to destruction ; and hence they are exchanged for others as soon as practicable or sold in hot haste. Of course these remarks apply only to peasants who keep bees ; yet the clergy here and others, though free from these prejudices, know as little of bee culture as the rest of the population.

Whether it is owing to the abundance of pasturage and a propitious climate or to the hardiness and industry of the Italian bee, that this valuable insect has survived amid such general neglect, mismanagement and ignorance, is hard to decide, though doubtless something is to be attributed to each of these causes. Local circumstances, too, may exert a favorable influence.

Among innumerable other, larger or smaller, honey-yielding herbs, plants, trees and shrubs, white clover is specially to be noticed in the fields here in season. The steep hill-sides produce plenty of wild thyme and heather. The cultivated field furnish no supplies for the bees till towards the end of August, when the buckwheat, sown in the rye-stubbles in July, comes into blossom. Of special account, too, is the blossom of the chestnut tree, which grows on the hills on both sides of the valley to the height of 3,000 feet above the level of the sea. In fact nearly the entire valley likewise might be called a chestnut forest. On a level plain this would constitute only a transient source of supplies ; but it is otherwise here. The mountains are steep and lofty, and beyond them are the Alps with their eternal snow. The result is that during the summer, vegetation advances slowly and gradually upwards from the valley. Thus in the spring the same species of plants bloom three weeks later at an elevation of 2,000 feet above than they do in the plain below, and are yet within reach of the bee's flight. Hay making begins earlier in the fields and meadows below, and flowers will again be blooming there, by the time the grass on the higher localities is fit for the scythe. We have this further advantage that the valley is narrow, not over half a mile wide. The bees can consequently resort to the pasturage on either side, while the sun is shining there—exploring the flowers and appropri ting the nectar on the one side in the morning, and turning in the afternoon to an equally well supplied area on the other. The soil is everywhere sandy.

From what has been said, it is manifest that a fair amount of pasturage is found here all the summer ; that every early issuing swarm, though small, can gather sufficient supplies for the winter, if placed in a suitable hive ; and that from strong colonies a large surplus of honey may be confidently expected. The best evidence of this is furnished by the stocks of the peasantry. In the course of my perambulations last fall, I saw more than a thousand hives, and though the increase of stocks had been nearly threefold, the average yield was rarely under ten pounds per hive. The most of them were decidedly full of honey, there being hardly six square inches of empty combs visible near the entrance below. This, too, while the hives had stood exposed to the full heat of the sun, so that the melted wax from the combs had run down on the bottom board, closing the lower entrance, and constraining the bees to deposit their stores from above. In many places the industrious insects, wanting room within, had built combs between the hives. What could not be accomplished here by the proper use of the movable comb hive ?

As regards the bees themselves, it were superfluous to speak further of their untiring industry, since it must be evident from what I have stated that they must labor as assiduously here in their native home, as they do wherever introduced abroad. In the absence, however, of common or black bees, we have no means of instituting a comparison ; but their extraordinary activity and productiveness repeatedly astonished me last summer.

In Germany, I regarded the Italian bees as pertinacious robbers, and had occasion frequently to protect the common bees from their encroachments. But here it was very obvious that they paid great respect to each other's rights, and refrained from attempts to commit depredations on their neighbors. We have often, the same day, deprived of their queens one-half of the colonies in a large apiary ; have kept at the side of my large and populous stocks, small or weak nucleus colonies rearing queens, most generally queenless, and scarcely strong enough to cover the brood combs ; yet no attempt was ever made to rob them. At the end of September and the beginning of October, we had for a time more queenless bees than we could properly dispose of. We placed them temporarily in roomy hives, supplied them with the needful honey, and set them among our other strong stocks, where, though the weather continued warm, they guarded their stores, and no serious attacks were made on them till we were able to 'use them for strengthening other colonies.

The bees with us are of a brownish yellow color; lower down the valley they are chestnut brown; higher up the mountains they are brighter and more slender. All of them are more active in their movements, especially when flying, than the common black bee. At first view I could scarcely persuade myself that the bees of the mountain and those of the valley were the same. But when we transported a number of our stocks from the plains to the Alps, for the purpose of gathering the finer quality of honey there, and these in a short time began to produce brighter colored bees, and the queens also grew lighter hued, we became satisfied that climate and nutriment determined the difference of color; and since then I make no distinction between them. Whether there are any other bees on this side of the Alps, which could claim a preference over the Italians we have here, I am unable to say, but intend to procure queens and workers next summer from various parts of Upper Italy; and will then compare them and report the result.

Last winter Prof. Mona procured a number of stocks from Piedmont, and the lower section of Lago Maggiore, under the impression that the bees found there were handsomer and better. A minute comparison gave these results: the workers resembled ours very much in color, though perhaps somewhat less brown. In size and shape they were precisely like the common black bees; and so likewise in their entire movements and deportment. Of the queens some were beautifully bright, others very dark, and less slender than those native here. I do not doubt that these bees are just as industrious as those of Tessin, but am unable to say anything from actual observation, as we removed their queens early in spring, and inserted in them royal cells of our own stock. It is not likely that Prof. Mona will soon make another such experiment. Mr. Spinedi, of Mendrisio, also gives the Tessinian bees the preference decidedly over all others. He says these are much more slender and more agile than those of Lombardy and Piedmont, and he therefore prefers them.

Beyond the Alps the bright yellow bees and queens are justly preferred, because there the local causes that influence differences are unknown, and by their brilliance of color they are so readily distinguished from the common bees cultivated there.

Among the enemies of bees, the following are enumerated here: the swallow, the death's head moth, the large wood ant, the small red ant, the wax moth, and the bee louse. Of these, the wax moth is regarded as most to be dreaded, not unfrequently producing widespread devastations in the apiaries.

As the winter here is short and mild, with a dry atmosphere, dysentery occurs among bees only in damp localities on the northern side of the Alps and the higher hills, which are overshadowed by these eminences nearly all winter. We usually have a number of stocks in the villages there, as the pasturage is rich and of long continuance; but we always remove them in autumn to the sunny side of the hills.

Fortunately for us foul-brood is entirely unknown on this side of the Alps, so that we are safe in buying bees and honey when and where we please. A large number of the German bee-keepers appear to be already well aware of this fact, as they purchased honey freely here last fall, which it is understood was to be used in feeding weak colonies preparatory to wintering. The price of honey depends on the quality and color of the article. The finest Alpine honey sells at two francs per pound; fine mountain honey, as also such as is gathered on the Alps late in the season, sells at one franc and fifty centimes; ordinary mountain honey one franc; valley honey gathered early in spring eighty centimes; second quality valley honey sixty-five centimes; buckwheat and heath honey, expressed from the combs, forty centimes. Yellow wax of good quality sells at from two francs and twenty-five centimes to two francs and thirty centimes per pound.

E. UHLE.

FAIDO, CANTON TESSIN, DEC. 23, 1866.

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[For the Bee Journal.]

IN answer to W. A. Flanders, page 190, April No. of the JOURNAL, I would say I have always considered the theory of the compression of the queen bee to lay worker eggs, to be correct. The cause of the egg in the queen cell being impregnated can be explained in this way; the compression is produced by the weight of the abdomen when eggs are laid in these *vertical* cells. I have long since believed that if we can get a queen to lay in drone cells while in a perpendicular position, that queens and workers could be produced from the eggs thus laid. This may perhaps be accomplished in one of the following modes. *First*, if a drone comb is placed in a strong swarm, containing little or no drone comb, in the height of the season, the queen may be induced to lay therein, and if the eggs are impregnated workers will hatch from them instead of drones. *Second*, by introducing a sheet of empty drone comb at the time of drone egg laying, and examining this every few hours during the first few days, the queen can be found supplying the comb with eggs. Now hold it in a horizontal position so that the cells she is supplying will be under. Mark the eggs laid while the comb is thus held, cut out that portion of the comb, and give it to a nucleus having no brood but this; and I have no doubt but queens can be reared from these eggs. Who will experiment on this? I will for one.

R. B. OLDT.

NEW BERLIN, PA.

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ONE of the most ingenious feeding-troughs is a French invention. It is formed of about eight hundred small cylinders of thick cartridge paper, about two thirds of an inch in length, closely applied together, each standing on its end; thus forming a mass not unlike a piece of honeycomb itself. The food being poured into a tin saucer, this artificial comb is placed on it, and the bees are able to feed almost in their natural state.

[For the American Bee Journal]

Various Items.

DAMAGE FROM MICE.

I was greatly troubled by mice in my bee-cellar last winter. Though keeping a trap set all the time, I caught no more than three mice. They preferred honey and bees to the bait.

On placing my hives on their summer stands, I found a number of combs almost destroyed by mice, and found three dead ones in one hive. One day I returned a colony into the cellar, and forgot to replace the honey board after examination. Next morning I heard some rattling in the combs, while trying to put on the honey board. I looked closer, and found that the rattling proceeded from a mouse. I took out three or four combs, and to my greatest surprise, found four mice near the cluster of the bees. I killed one of them with a stick, and caught another by its tail. To ascertain whether the bees would kill this mouse if brought within their reach, I held her directly over the cluster. Two bees immediately crawled on the mouse, which curling round a little, seized each of them and devoured both. But a third bee had meanwhile crawled on the mouse and gave her a sting, from the effects of which she soon died.

Formerly, I was of opinion that mice devoured dead bees only, eating honey and spoiling the combs. But I am now of opinion that they eat living bees also, and probably sometimes destroy a colony; though I have never yet had a colony destroyed by them.

DELAYED FECUNDATION.

Two years ago, I found the first young fertile queens on the 5th of May; and last spring on the 7th of May. This spring out of twenty-seven queens, only two were laying yesterday, (May 20th.) All but five were either lost, or killed by the bees. One of them I had taken away from her colony which had enclosed her; but the bees would not feed her in the cage, though placed in the centre of the hive.

This delayed fecundation results, in my opinion, from the long-continued cold weather. At no time was the thermometer more than 14° R. above zero in the shade. I have had thousands of drones in my apiary, for about two weeks past, and about fifty of them as early as the first of April.

The present spring is the latest and coldest I experienced in this country in eighteen years. To-day (May 21st) not an apple tree is in blossom, and it will require at least one week more to bring them into full bloom. Bees have been gathering pollen to any extent only during three days and a half this spring, and honey during two days only. An immense number of colonies have starved or perished from other causes. One man lost fourteen out of fifteen, and another fifty out of eighty-four. A great number of bee keepers have lost all theirs. As for myself, I lost some stocks too, but only a small number compared with the number I wintered—twenty-three out of four hundred and forty-one. I will not deny, however, that a large number of my hives are weaker than I have ever had them before.

A SINGULAR OCCURRENCE.

I had a valuable queen in a weak colony, and removed her to another, strong but queenless. On examination five days afterwards, two unsealed queen cells were found. To mark the time when these cells would be sealed, I made another examination two days later; but to my surprise both queen cells were destroyed. Examining more closely I found a fertile Italian queen, but it was not the one I had removed before. On the preceding day, a weak colony had deserted its hive in my absence. The queen found belonged to this colony. The hives stood several rods apart. How did the queen know that this hive was queenless? And why did the bees not kill her, as they had both brood and queen cells?

I observed another very singular occurrence last spring. One day early in May, I had two colonies desert their hives. One of them had a good half bred Italian queen; the other a common black one—the only one I had in the apiary. About a week after this, I examined a stock of Italians which had a valuable queen, but could not find her. Three days later I re-examined the hive, and found lots of eggs, but no Italian queen. I examined all the combs over again, and to my chagrin found a small black queen. How she came there and was successfully established in the colony is to me a mystery yet. But something more puzzled me. Four weeks after the swarming out of the black colony, I noticed young black and Italian workers play out of this hive, and the stock rapidly changed into a hybrid. The queen of the hybrid colony must therefore have successfully entered the hive of the black colony.

A. GRIMM.

JEFFERSON, WIS., MAY 21, 1867.

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[For the American Bee Journal]

Two Mishaps.

Four years ago in July, I discovered a swarm of bees leaving the hive. They had been hived the day before. I closed the entrance, raised the hive a trifle, holes in the top of the hive open, honey boxes removed, cap covering the boxes on the hive. Other swarms issuing kept me occupied for an hour and a half, when on looking at them I found them all dead. There was not a dozen live bees in the hive. About noon one day last June, I put about a quart of bees in an empty hive; put on a queen-rearing box, letting the bees enter it; hole in the top of the box two inches square, covered with wire cloth. At night two-thirds of them were dead.

In my ignorance of bees and their management, I had always supposed, until since reading Mr. Adair's statements in the February Number of the JOURNAL, that they were smothered. If Mr. Adair, or any of the numerous readers of the JOURNAL, can give me any other satisfactory reason for the loss, I should be glad to hear from them.

A WOLVERINE BEE KEEPER.

For the American Bee Journal.

Introducing Queens.

Friend Bee Journal:—With your permission I propose saying a few words on the introduction of queens. As this subject, in view of the efforts now making to establish the Italian race of bees in our country, is a matter of prime importance to bee-keepers, it is essential that the principles on which the operation can be safely conducted, should be fully discussed, in order to be correctly understood.

So far as I am acquainted with the facts, those giving us a *way*, rarely give us a *reason* for their success, that the novice may know on what principles to conduct the operation. Hence my object in this article is not to tell of some other way to do this thing, for all that can be asked is that the *process* should be *short* and the *result* CERTAIN. I simply wish to show *why* the methods already given are successful, or *why* they are not.

If I correctly comprehend the subject, all the methods thus far practiced are based on one or the other of two important facts in the natural history of the bees—facts which should never be lost sight of for a moment, by those having this thing in hand. The first of these facts, and the one generally acted upon, so that the *deprivation of a queen* creates an abnormal condition of the colony bereaved, appealing directly to the law of self-preservation, which causes the bees to accept an offered remedy, on the principle that "drowning men cling to straws." Hence if the operator conduct the matter on the conditions of bereavement, he must either practice some method like that given by Knauff or Mr. Gallup, which takes advantage of the *first excitement* caused by deprivation; or delay the case until the bees are made conscious of their *inability* to rear a queen, and the *abnormal* state is fully established.

The second fact to be taken advantage of, is the one so happily hit upon by Mr. Allen's plan. It is, that bees have no means of *recognition*, except through the *sense of smell*. I am fully satisfied that a colony of bees in a *normal condition* will never accept of a strange queen under *any circumstances*, except through *mistaken identity*.

Hence Mr. Allen's plan of smoking the bees with tobacco, and removing the queen without their knowledge, would seem to present as favorable circumstances for *practicing deception* upon them as could well exist. The bees and queen are made of the same scent by this plan, which if *properly* conducted leaves no *possible chance* for the bees to detect the cheat.

Thus we have presented the two methods of introduction. The first embracing all those which make the *recognition of queenlessness*, by the bees, an ultimatum of success, and consequently a matter of *choice* with the bees; and the second relying on the completeness of a deception.

I have never tried Mr. Allen's plan, but am disposed to regard it as the best yet presented—both in regard to *shortness* and *completeness*. It not only makes all of the *same scent*, but also *subdues the anger* of the bees; which is a very important matter. That many queens are lost by arousing the anger of the bees in the act of introducing a queen, and then leaving them to wreak their vengeance on the first thing that comes in their way, is a matter too little heeded.

If bees show a disposition to *sting* when a queen is being introduced by any of the methods adopted, the bees should at once be thoroughly subdued by smoke.

I have on two occasions had a queen killed by her own bees, just because I had *aroused their anger*, and left them to hunt a new object of spite. The facts satisfies me that the bees when angry, are not above *human nature*, but sometimes do that under such excitement which they would never do under other circumstances.

For this reason I would say to all introducing queens, never trust any one to the "embrace" of an angry colony of bees. Force them to yield by some means, and then you are safe.

G. A. Wright.

Osage, Iowa.

[For the American Bee Journal.]

Introducing Italian Queens.

Editor Bee Journal:—There are several methods given for the safe introduction of Italian queens, neither of which is always successful. The one recommended requires that the native or black queen to be removed six or eight days before the Italian is introduced. This method also requires that the stock be examined once or more, and all queen cells cut out or destroyed, making considerable trouble and delay, and keeping your stock of bees without a laying queen for several days. All other plans which I have seen published, are alike faulty. It would be very desirable to the bee-keeper to be able on the same day he receives his Italian queen to introduce her at once, without any risk of her being destroyed. Believing that I have discovered such a method, I will give it to my bee-keeping friends, after having, I think, fairly tested it. When I wish to introduce an Italian queen, if the stock is in a movable comb hive, I at once search for and remove the native queen. I then drive all the bees into an old box hive, or some other convenient box; or otherwise brush them off the combs any way to get them out of the hive into the box. As soon as I have done this, I take the hive and place it on the swarming table, and shake the bees out of the box, letting them run into their hive again, the same as if I were putting in a swarm. And when they are going in, I let out my Italian queen among them. She runs in with the rest, and is at once accepted. I have never known it to fail.

J. H. Thomas.

Brooklin, Canada West.

Seasons, situations, and the laws of nature, present influences which may be guarded against or assisted, but which cannot be completely controlled.

Combining Systems.

BY DZIERZON.

Experience has shown that neither the swarming nor the magazine system of bee culture can be universally adopted and pursued to the exclusion of the other. The nature, extent, and duration of the pasturage will usually determine which system is to be preferred, or in what degree the two may be advantageously combined.

The swarming system will be found profitable only in districts of country where the pasturage, though never superabundant, comes in early, is always moderately full, diversified and of long continuance ; and where the fall supplies are of a similar character. In such situations, early swarms will be able to fill their hives with combs, and store them with honey enough for the ensuing winter, whilst the parent stocks can gather honey enough for their own wants, with a satisfactory surplus for their owner ; and the young prolific queens can speedily replenish the population of the hive. There a stock thus divided into two or more colonies, will increase rapidly, and present a much larger force for the ingathering of the harvest, than if it had remained in one united body dependent on the diminishing vigor of the old queen.

But where the pasturage, however plentiful, is of short duration, is made up almost wholly of the blossoms of a single species of plants, and terminates suddenly and entirely with the withering of these ; and where moreover no fall supplies are to be looked for, it is always advisable to adopt and adhere to the magazine system. Enlarged room may then be provided for the bees in season to enable them to store up the honey so transiently within their reach ; and it will be found better to secure an increase of stock later in the season by artificial multiplication than to allow the bees to waste precious time in preparations for swarming, while they should be engaged in honey-gathering. Even if swarming be allowed, under such circumstances, it results only in depopulating and weakening the parent stocks, and the young swarms will spend the honey they gather in building combs which cannot afterwards be filled, and starvation not unfrequently overtakes them even before winter sets in.

Yet there are sections of country where, though the swarming system is preferable on the whole, the seasons are sometimes of such a character that the magazine system would be profitable. Thus, after the swarms have issued, the weather in the latter part of summer and in the whole of the fall, may be such, in some years, that supplies of pasturage are almost wholly cut off, and both parent stock and swarms are so poorly furnished that they will die of hunger or must be carried over winter at much cost by regular feeding. Whereas, magazine hives would, under the same circumstances, have secured enough at least to carry them safely forward to the ensuing spring. Or it may happen in some years that there is a superabundance of honey in the spring, though the bees do not swarm, anxiously as such secession is looked for, and when finally the bee-keeper abandons all expectation thereof and supplies the bees with surplus honey receptacles, it is usually too late to be of much avail. Had no delay been permitted, a fine harvest of honey might meanwhile have been secured.

It is hence obvious that it will be advantageous not to adhere doggedly to either system, but so to arrange matters that either may be resorted to, as locality or season may render desirable, and to modify our procedures accordingly.

My hives and my method of managing bees are adapted to the requirements of either system, though in practice, I prefer on the whole, making artificial colonies to swarming. As my hives are close and warm, they are well suited to foster the production of natural swarms, when from any reason that is regarded as desirable. At the same time they are better adapted to the magazine system than any others. Still, I do not consider it advisable that bee-keepers residing in districts where straw or box hives are in common use should suddenly cast them aside, and substitute for them the movable comb hive. The latter are superior only when in the hands of an intelligent operator, who makes them the subject of study and attention. He must know *how* to use them, and actually use them properly in practice, or they will be of no more value to him than those made of a hollow log, if not actually inferior. Let a bee-keeper who is accustomed to the old fashioned hives, and uses them in the ordinary mode, retain them in his apiary, and attend to them with his usual diligence and care. He will then be safe, so far as bee-keeping on the old plan can give any assurance of safety. But let him also introduce a few movable comb hives that he may gradually learn how they are to be used, and proceed to add to their number, as he becomes aware of the superior facilities they present, and familiar with the manipulations requisite to make those facilities available. Valuable results will assuredly be realized in this way, because while learning the proper management of the new kind of hive, he will unquestionably become better qualified to manage bees even on the old system and in old-fashioned hives.

Where movable comb-hives are used, even on the non-swarming principle, in an apiary in which most of the colonies are still kept in common hives, they furnish the means of building up weak swarms, issuing from the latter so late in the season that they could not procure supplies for the winter. Such late swarms may be put in movable comb hives, and then aided and strengthened with brood and honey from like hives, and soon brought to a condition enabling them to winter safely. And again, when a season unpropitious for swarming occurs, because from a superabundance of honey stored up from early spring pasturage, the brooding space has become unduly contracted, bees kept in common hives would produce no increase by swarms, and there would be a small yield of honey in the fall, for the bees would use it freely for the production of brood when the gathering season was over, and empty cells enabled the queen to recommence laying eggs.

In such seasons and circumstances, it is a decided advantage to have both kind of hives in an apiary, because room can be furnished in movable comb hives for a continuous storage of honey by removing full combs, and either replacing them with empty ones or permitting the bees to build new. Artificial colonies too may be made in such seasons by taking brood and queen cells or queens from movable comb hives, and the bees needed to populate them from the colonies in common hives, and where they are hanging out in idle clusters. When taking honey from the movable comb hives in autumn and reducing stock, instead of brimstoning the bees, these may be united with those in the common box or straw hives, and thus saved with mutual advantage.

I have thus indicated a few of the reasons why the introduction of movable comb hives should, in most cases, be a gradual process, while retaining the common kind in the apiary, and shown also that swarming and non-swarming systems do not necessarily exclude each other, but may be rendered very serviceable when used in combination.

Mead.

Prior to the introduction of agriculture into Britian, mead was the principal cordial beverage of its inhabitants. Matthias de Lobel, M. D. calls it Cambricus potus. In other northern nations also it was formerly in high estimation.* This must have proceeded, either from their unpampered simplicity of taste, from their lack of other cordials, or from their having a better method of making their mead than has been handed down to posterity; for certainly in the present day it is a liquor seldom made, and holding a very humble rank among our imperfect vinous productions. It however continued in favor long after the introduction of malt liquor, and the northern inhabitants of Europe drank it generally until very modern times; and even in England, so late as the days of Dryden, it seems to have been better known than it is now, being sometimes used to soften or dilute strong wines.

"T' allay the strength and hardness of the wine,
Let with old Bacchus new Metheglin join."

To show how highly it was formerly esteemed in this country, I will give an extract from an ancient law of the principality of Wales, where "the praises of it, accompanied by the lyre, resounded through the spacious halls of her princes." "There are three things in court which must be communicated to the king, before they are made known to any other person :—

"1st, Every sentence of the judge.
2d, Every new song; and
3d, Every cask of mead."

Mead making seems to have been regarded by our forefathers as a high and important avocation; at the courts of the Princes of Wales, the mead maker was the eleventh person in dignity, and took place of the physician. We read in the English history, that Ethelstan a, subordinate King of Kent, in the tenth century, on paying a visit to his relation Ethelfleda, felt very much delighted that there was no deficiency of mead. According to the custom at royal feasts, it was served up in cut horns and other vessels of various sizes. About the same period, it was customary to allow the monks a sextarium (about a pint) of mead, between six of them at dinner, and half the quantity at supper.

Queen Elizabeth was so fond of mead as to have it made every year; her recipe for it will be found at the end of this chapter.

Bruce tells us that the Abyssinians still use it as their common beverage. They ferment it with a small quantity of parched barley-meal, and take off its luscious taste by the addition of a few chips of Surdo wood. With the same intention the juice of the mountain-ash berry is fermented with it in some parts of Wales. Probably, says Mr. Knight, the barbarous inhabitants of Europe formerly acidulated *their* mead with it.

' Poculo laecti
Fermento, atque acidis imitantur Vitea sorbis.

According to Feburier, though mead is much despised in France, when presented as mead, yet it is much used there under fictitious names, such as wine of Rota, of Medeira. of Malvoisin (Malmsley), and of Spain.

It was probably the liquor called by Ossian, the joy and strength of shells, with which his heroes were so much delighted; the Caledonian drinking-vessels having consisted of large shells, which are still used by their posterity in some parts of the Highlands. Mention is sometimes made also of the Feast of Shells.

Mead was the ideal nectar of the Scandinavian nations, which they expected to quaff in heaven out of the skulls of their enemies; and as may reasonably be supposed, the liquor which they exalted thus highly in their *imaginary celestial banquets*, was not forgotten at those which they *really* indulged in *upon earth*. Hence may be inferred the great attention which must have been paid to the culture of the bee in those days, or there could not have been an adequate supply of honey for the production of mead, to satisfy the demand of such thirsty tribes. In further confirmation of this attention, it may be observed that in France the ancient Barons drew a considerable revenue from the tax upon bee-hives; and they were among the articles of which a return was made at the doomsday survey.

The mythology of Scandinavia, (the religion of our Gothic ancestors) was imparted by Sigge or Odin, a chieftain who migrated from Scythia with the whole of his tribe, and subdued either by arms or arts the northern parts of Europe. From him descended Alaric and Attila. In the singular paradise which Odin sketched for his followers, the principal pleasure was to be derived from war and carnage; after the daily enjoyment of which, they were to sit down to a feast of boar's flesh and mead. The mead was to be handed to them in the skulls of their enemies, by virgins somewhat resembling the houri of the Manometan paradise, and plentiful draughts were to be taken, until intoxication should crown their felicity. Hence the Poet PENROSE thus commences his "Carousal of Odin."

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* "Hydromel Borealibus, quibus vino desunt, pro vino est."—De Loebel.

"Fill the honey'd beverage high,
Fill the skulls, 'tis Odin's cry!
Heard ye not the powerful call,
Thundering through the vaulted hall?
Fill the meath and spread the board,
Vassals of the grisly lord!—
The Feast begins, the skull goes round,
Laughter shouts—the shouts resound!"

Hence, likewise in an ode by Mr. Stirling, we find the following illustration of the northern Elysium.

"Their banquet is the mighty chine
Exhaustless, the stupendous boar;
Virgins of immortal line
Present the goblet foaming o'er:
Of heroes' skulls the goblet made
With figured deaths and snakes of gold inlaid."

Boar's flesh was considered by these tribes as the highest delicacy; the celestial boar was supposed to be daily renewed, and to afford an ample repast for the most numerous party: a quantity of mead also, sufficient for the intoxication of this paradisiacal community, was imagined to be daily supplied by a goat called Heidrunn

"Whose spacious horn would fill the bowl
That raised to rapture Odin's soul;
And ever drinking, ever dry—
Still the copious stream supply."*

I could not refrain from adducing these short historical and poetical evidences of the high estimation in which mead was held by our northern ancestors. I trust that I shall also stand excused for still further lengthening my preamble by entering upon *the general principles of wine-making.*

The grand desiderata in wine are strength, flavor, and pleasantness:—to accomplish the first, sugar must be converted by fermentation into alcohol; the second depends upon the article to be vinified, and upon the management of the process of vinification; flavor may likewise be produced artificially by different adjuncts: pleasantness will principally result from the same causes, but more especially from the liquor holding in solution a certain quantity of unconverted sugar.

The elements necessary to a due fermentation and to bring the process to a satisfactory issue, *are sugar, extractive matter, acid of tartar and water* These exist in the highest perfection and in the best relative proportions in *the grape:* hence the superiority of foreign wines. Whoever therefore expects to imitate with much effect, those generous liquors, must supply in the process, those ingredients in which the article sought to be converted into wine is deficient.

If the native juices of fruits be deficient in sugar, it will be impossible to convert them into a strong wine without a proper supply of that ingredient; and without a sufficiency of extractive matter, which is the natural ferment, a due fermentation could not be established; the wine would be sweet but not potent; *sweet wines being the produce of an incomplete fermentation.* If the extractive matter were in excess, the liquor would have a tendency to the acetous fermentation, which might also be induced by a superabundant proportion of water,

The result of a complete fermentation is a dry wine; and to produce which, the elements must be nicely balanced, and the process conducted under favorable circumstances, with respect to temperature, tunning, stopping down, &c.

Two opposite practices prevail, in the manufacture of the same sort of wine; *some winemakers boiling the juice before fermentation, others conducting the whole process without boiling.* The propriety or impropriety of these practices depends upon the quality of the juices to be vinified. Extractive matter is partially coagulable by heat; boiling therefore, by causing this matter to separate and to be deposited, tends to the production of a sweet wine. The extractive matter may also be precipitated by sulphuric acid gas, (burning in the cask a brimstone match as hereafter directed,) or by sulphuric acid itself, with which the soluble leaven forms an insoluble compound. Hence where the extractive matter is in excess, and where there is danger of fermentation going on too rapidly, boiling or sulphuring will be useful both to the wine and cider-maker, in checking or preventing fermentation. The superfluous extract thrown up in the course of fermentation as yeast, or deposited as lees, will, if remixed with the liquor, have the effect of continuing the fermentation: hence the utility of racking and fining, where it is in excess; and of reunion, where it is deficient. *Artificial leaven or yeast*, which contains the extractive principle in great abundance, affords a supply to those juices which are deficient in it, and without which they will not ferment. *Natural leaven*, (i. e *extractive matter*) is soluble in cold water, artificial leaven is not: during fermentation, therefore, the latter is always thrown off: so also is the greater part of the former, if the process be well conducted.

Most of the fruits of this country abound in *malic acid;* those that possess only a moderate quantity of it, however, afford excellent wine with the addition of sugar only; still better wine may be obtained by the further addition of the acid of tartar. Where the malic acid prevails so abundantly as to make its neutralization desirable, Dr. M'Culloch, (to whom I am indebted for much of the information contained in this chapter,) recommends coating the insides of the fermenting vats with a white wash of *caustic lime.* I have neutralized the malic acid, by putting into the cask, after the sensible fermentation has been completed, about a pound of *egg shells* to every sixty gallons of wine.

The acid of tartar increases the fermenting power of fluids: half-ripe fruits possess it in the greatest abundance; hence the vivacity of champagne and green gooseberry wine. It is most conveniently used in the state of supertartrate of potash or common cream of tartar; the common rough tartar is in some respects preferable, as its admixture of yeast assists in perfecting the fermentation.

All vegetables contain more or less of extractive matter; those that possess little may be assisted in their fermentation by that process being conducted in wooden vessels, wood supplying the extractive principle to the liquor; the same juices, therefore, which would ferment very well in wood would scarcely ferment at all in glass or earthenware.

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*Considering the moderately intoxicating power of mead, it may be presumed that no inconsiderable quantity was required at these jovial banquets, as it is calculated to contain only seven parts of alcohol in a hundred.

The extractive matter and the sugar are seldom completely destroyed in any wines; the existence of the former is evinced by the skinny matter frequently deposited upon the inside of the wine bottles; the latter may be detected by a nice palate, in the very driest of our wines; its predominance indicates an inferior wine.

From the preceding observations, my readers have probably anticipated my opinion of *honey in wine making*. I regard it merely as a *substitute for sugar*; and to those who approve of its flavor I recommend the following *directions*, which I have successfully followed for several years, having my home-made wines enriched with a considerable portion of foreign flavor: Dissolve an ounce of cream of tartar in five gallons of boiling water; pour the solution off clear upon twenty pounds of fine honey, boil them together, and remove the scum as it rises. Toward the end of the boiling add an ounce of fine hops; about ten minutes afterwards put the liquor in a tub to cool; when reduced to the temperature of 70° or 80° of Fahrenheit, according to the season, add a slice of bread toasted and smeared over with a very little yeast; the smaller the quantity the bettre, for *yeast invariably spoils the flavor of wines*, and where there is a sufficiency of extractive matter in the ingredients employed, it should never be introduced: if fermented in wooden vessels, none is required. The liquor should now stand in a warm room, and be stirred occasionally. As soon as it *begins* to carry a head it should be tunned, and the cask filled up from time to time from the reserve, till the fermentation has nearly subsided. It should now be bunged down, leaving open a small peg-hole; in a few days this may also be closed, and in about twelve months the wine will be fit to bottle.

The ancients were accustomed to boil their mead for a considerable time, until the liquor would buoy up a fresh egg, allowing it to rise above the surface, about the size of a shilling, the criterion by whiah they judged that the process of boiling might be discontinued.

Many makers of both wine and cider have been unconsciously benefited from the acquisition of tartar by their liquor, it being a frequent practice to tun into an empty foreign wine-cask, whose incrusted sides have supplied their wine or their cider with a portion of that necessary ingredient for perfect vinification.

It is a practice with some to add spices to their mead during the fermentation, such as ginger, cloves, mace, rosemary, lemon-peel, &c. This is bad economy; a much smaller quantity will communicate the required flavor if the addition be made after the fermentation has ceased.

A *common beverage* is sometimes made, by simply washing the refuse honey-combs in water, after extracting from them as much of the honey as will run, and then boiling it for a few minutes: this liquor will not require tartar or yeast: it should be tunned as soon as cool, bunged down in three or four days, and drank in a few weeks. In some parts of Wales the refuse-combs are brewed with malt, spices, &c., and the produce is called *Braggot*, a name derived from the old British words *brag* and *gots*, the former signifying *malt*, the latter *honeycomb*.

Simple hydromel is made either with honey which has become acid, or with honey and acidulated water; it is not fermented, but used extemporaneously as a summer beverage.

Feburier recommends one part of honey to be mixed with three parts of water, which he says will begin to ferment in about eighteen days, and throw off lees for six weeks or two months.

A knowledge of the principles of fermentation will enable the wine-maker to regulate its process. Thus, if a dry wine be desired, and fermentation be suspended, it may be renewed by a restoration of the separated leaven, or the addition of fresh; or by agitation, and a remixture of the lees. It is upon the latter principle, called "*feeding on the lees*," that some foreign wines are improved by long voyages; but this treatment, so *serviceable to Madeira and other Spanish wines*, and also to some of the French wines, *would destroy Burgundy;* the high aroma for which this wine is so much prized being obtained at the expense of some of its vinous attributes. If there be an excess of fermentation the scientific operator will regulate, check, or suspend it, by skimming, racking, fining. If skimming and racking do not succeed, recourse must be had to *fining*, which may be effected *by isinglass*, in the proportion of about an ounce to 100 gallons. The isinglass must be beaten, for a few days, with a whisk in a small quantity of the wine, till completely attenuated. This solution must then be well stirred into the cask of wine, which in about a week will become fine, and fit for being racked off. This fining is accomplished by the union of the isinglass with what is called the tannin of the wine. Fining may also be effected by *stumming*, i. e. *by burning in a close vessel, containing a small part of the wine, a brimstone rag*, at the rate of a drachm of sulphur to thirty gallons; and when consumed rolling the cask about for a quarter of an hour, that the wine may absorb as much as possible of the sulphuric acid gas. This being done, the cask is to be filled up with the remainder of the wine, and bunged down. In this process the sulphuric acid, or its oxygen, unites with the extractive matter or soluble leaven, which, being thereby rendered insoluble, is precipitated to the bottom, as I before observed. If wines be perfectly fermented, they do not require the addition of any brandy, as a sufficiency of spirit is generated during the process.

The best temperature for carrying on a fermentation is about 54° Fahrenheit. Its perfection depends in some degree upon the volume of the liquor; the larger the quantity, the longer the fermentation will continue, and the stronger and pleasanter will be the wine. There are, however, exceptions to this rule. The peculiar excellence of champagne would be destroyed if its fermentation were conducted upon a large scale: it may be made successfully in a gallon measure. This wine is so managed by the makers as to ferment after bottling.

Dry wines and fine wines are much more durable than any others; and those that would perish in cask, *may be preserved many years by bottling.*

These hints will, I hope, enable the makers of home-made wines to conduct the process scientifically, and to secure generally a successful issue. Cookery books and good housewives abound in receipts for wine-making, which are very often fanciful and absurd, recommending the introduction of articles which, in their very natures, counteract the production of good wine. Hence we are sometimes presented with such miserable mawkish stuff, as disgraces the name of wine, being only rendered tolerable by the brandy which has been added to it, and which in some degree covers the crudeness and insipidity of the compound, and moderates its hostility to the peace of our stomachs.

Ancient Testimonies in favor of Mead.

Mead of the finest quality was called Metheglin, a name derived from two Greek words, signifying vinum splendidum: it was the produce of finer honey than Mead, and contained a greater proportion of it to the quantity of water. Metheglin was to Mead what Vinum was to Lora; what prime cider fit for bottling is to common draught cider.

So much was Mead esteemed in Transylvania that Mercator speaks thus of it: "Qui etiam rerum peritis, Vinum Creticum ceu Malvaticum opinantibus facile imponat."

"Lautiorum tantum mensarum sit, et primates solum bibant," says Ulysses Aldrovandus.

"Mulsum est vinum utilissimum et stomacho convenientissimum," Lobel and Pictorius.

Mulsum is stated by Dr. Henderson to have been a mixture of wine and honey.

Age was considered as necessary to its excellence: "Vetus sit et rite confectum," says Andreas Mathiolus.

Queen Elizabeth's Recipe for Mead.

Take of sweet-briar leaves and thyme each one bushel, rosemary half a bushel, bay-leaves one peck. Seethe these ingredients in a furnace full of water; (containing probably not less than 120 gallons) boil for half an hour; pour the whole into a vat, and when cooled to a proper temperature, (about 75° Fahr.) strain. Add to every six gallons of the strained liquor, a gallon of fine honey, and work the mixture together for half an hour. Repeat the stirring occasionally for two days; then boil the liquor afresh, skim it till it becomes clear, and return it to the vat to cool: when reduced to a proper temperature (about 80° !) pour it into a vessel from which fresh ale or beer has just been emptied: work it for three days, and tun.

When fit to be stopped down, tie up a bag of beaten cloves and mace, (about half an ounce of each) and suspend it in the liquor from the bung-hole. When it has stood for half a year it will be fit for use.—*Bevan on Bees.*

[From the Bienenzeitung.]

Another Exception.

Mr. Rothe stated in a recent communication to the *Bienenzeitung*, that he has observed an instance where a normal queen issued from a side-opening in a royal cell. Permit me to say that a similar exceptional case came under my notice last summer. I placed a queen cell nearly mature in a queen cage, intending that its inmate should there complete her development. On examining it a few days after, I found a young and apparently perfect queen moving about in the cage. The apex of the cell did not present the circular opening usually seen when the newly-hatched queen has emerged. It was still entire, and closed, but there was an opening on the side of the cells as if it had been made by workers in the usual manner, though none such could have had access to it, and through this side-opening the queen must have emerged. She subsequently, when liberated, made her hymenial excursion, and was duly fertilized.

DISTANT BEE PASTURAGE.

In the course of last summer I had an opportunity to observe the influence which the greater or less distance at which bee pasturage is found, exerts on the population of a hive. One of my apiaries was located at a place in the immediate vicinity of which there was literally nothing for the bees to gather. The apiary was completely surrounded with grain fields, encompassed by mulberry hedges, neither of which yielded honey. The few and small patches of meadow land in the neighborhood, were poor and marshy, with few flowers furnishing nectar. To obtain supplies sufficient for their subsistence, the bees were consequently constrained to fly to a considerable distance. Thus, for instance, I noticed about the middle of June that they were passing to and from a chestnut grove then in full blossom, and which was about three miles distant. The weather was warm and somewhat sultry. The queens laid an abundance of eggs, and the hives were full of brood. Nevertheless, when examining the hives at eve, after the day's toil was ended, I found only small supplies of honey and a scant population. At first, I was unable to account for this, because judging from the masses of brood seen in the hives, large numbers of young bees must have been issuing daily, and the stocks should consequently have been well filled with bees. On reflection, I became convinced that it was the distance to which the bees were constrained to fly to reach their pasturage, that caused the striking paucity of population—a large proportion of those which went forth in eager quest of honey perished on the way from various mishaps, and never returned to their native home.

I remember that when formerly expressing to older bee-keepers, my apprehensions that bees placed in certain localities would be unable to gather stores enough for their own subsistence, I was assured that I need give myself no concern about the result, because the bees would make their way to great distances. Such is, no doubt, the fact, but when bees are thus compelled by sheer necessity to undertake distant excursions, they may possibly manage to "live along," but no profit can be realized from their labors. All the gratification which the bee-keeper can hope for in such localities, is the pleasure of seeing his industrious favorites flying out and in very busily, without accumulating a particle of surplus honey ; and in unfavorable years he may have the mortification of seeing them perish from hunger, unless he considerately and seasonably makes provision for their wants. Dr. Blumhof.

[For the American Bee Journal.]

Questions and Answers.

Questions *intelligently* and *briefly* asked, and answers carefully made, based upon *actual experience*, will no doubt add very much to the life and interest of the Bee Journal :

1. As regards straight combs, there can be no doubt but that bees have certain unaccountable vagaries. Langstroth's movable bars, on a level, *will not* ensure straight combs ; neither will an elevation of 45° have the effect without failures occasionally. Guide frames are too troublesome and disturbing. The writer has found guide combs, or surplus combs from various hives, the surest way. *Every other* bar with a straight comb will ensure straightness in the others ; but even then, sometimes, if the combs are not all complete, the lower part, or side, will be too thick, at the expense of its neighbors. Infallibility is *not yet* attained.

2. Eggs and brood of bees and moths can be destroyed by *freezing* in an ice house.

3. The third question is too indefinite. No short or easy road for a novice in bee-keeping. If by "dividing bees" is meant to separate a *swarm*, then even a novice, by noticing their behaviour, would soon see that where the queen is there will be comparative quietness and readiness to enter the hive prepared for them ; while the others would soon take wing.

If a *hive* is meant or a number of bars, the presence of brood in each portion precludes any one plan by which "a person of ordinary intelligence need not search for the queen."

4. Nuclei carried beyond the ordinary flight (say two miles) would raise more queens than one full hive—that is, supposing they are separated.

5. The fifth is an echo of question No. 1, on page 165. Well, any one can *ask* questions, and the reason this one has not been replied to before is because, perhaps, the writer is less modest than his apiarian brethren. But we shall not presume to *answer*. (Who can ?) We only reply.

Will it pay to cultivate any plant expressly for honey ?

We can only say that the fact of keeping bees might very fairly be the turning point with a land-holder, whether he would put a certain field into buckwheat or white clover. Beyond this, it is doubtful if it would pay : even supposing he did not feed his neighbor's bees as well as his own.

Which plant is best ?

White clover, most certainly.

How many acres would keep 100 colonies busy while in bloom ?

One—on the principle that it is with *all* bees, as with *some* men : "keep what you get and get what you can."

How *many* days in average seasons, and *how long* each day, does it yield honey ?

Give it up.

The other two questions are easily answered, supposing that clover (white) is the only available plant.

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Now, Mr. Editor, I would like to ask one question. Have any of your readers ever tried *painting* the top of bars and the under part of the honey board—that is, in order to prevent the bees from building comb between ?

Apis.

Burying Bees.

A bee-keeper in the vicinity of Hitchin, in England, buried a hive of bees, in the first week in November, about a foot deep, amongst dry leaves, &c., and disinterred it in the last week in February, when it was just *two pounds lighter than it was in November*, and the bees *in a lively and healthy condition.* Another person residing in Leicester, immured a hive of bees in the earth, four feet deep, in the second week in November, and at the end of January, it was removed, and weighed only *three ounces less than it did before it was buried.*

These experiments are worthy of further consideration. The principal points by which there might be cause for fear of failure, would, as in other cases, be from dampness, want of fresh air, access of vermin, &c. But these might be guarded against by a person of ordinary ingenuity. Still it would be imprudent for any one to risk the loss of an entire apiary by this mode of wintering, at least not until he had obtained knowledge and skill, by trials on a small scale.

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When, from any cause, or under any circumstances, it becomes necessary to feed bees, pure honey is much the best and most suitable food to give them. But if you have not a supply of honey at hand, and cannot procure it, you may form an excellent substitute by boiling ale and sugar together, gently, in a clean and well-tinned vessel, over a clear fire, for about five minutes. One pound and a half of sugar may be added to each quart of ale ; the mixture to be skimmed as the scum rises to the surface during boiling. When the syrup is taken from the fire, add to it about a teaspoonful of common table-salt for each quart of syrup.

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Some people defer feeding until the bees are absolutely in want. This is very wrong. The assistance should be rendered several weeks before the hive is in a state of positive destitution, otherwise, when you feed, the bees will be too weak to avail themselves of your bounty.

An Inquiry into the Source and Nature of Bees-Wax.

Till within these few years it was very generally and implicitly believed, that the yellow matter (in other words, the pollen or farina of flowers,) which bees visibly collect on their thighs, is the prime constituent of wax, the material of the honey-comb. Even Swammerdam, Reaumur and Bonnet were of this opinion. Butler, Purchas, Resden and Thorley argued against its identity with wax; and I trust that the observations and experiments which I am about to detail, will convince the dispassionate inquirer of the fallacy of this old opinion.

In the first place, it is to be observed, that where no more comb can be built, as in old hives, the bees carry in the greatest quantity of this yellow matter.

Secondly, That it differs materially from wax, the latter when examined between the fingers being adhesive, the former crumbly; the latter also liquifying on the application of heat, whilst the former burns to ashes.

Thirdly, That the wax of new combs, from whatever source collected, is uniformly white; whereas, the farina, as gathered by the bees, varies in color, being generally yellow or red, agreeing in color with the anther dust of the flowers in blossom at the time of its collection. Moreover, the farina after it has been stored in the cells, retains its original color; whilst wax, after its residence in the hives, invariably changes, first to a yellow, and lastly to a dark brown. Layers of different-colored farina are generally found in the cells, if slit down; and every hive, at the season of deprivation, possesses a store of it.

Fourthly, That fresh colonies carry in very little, if any, of this matter, for some days after swarming, though combs are formed within that period. I noticed this fact in my first colony: the swarm issued from the parent hive on the 18th of May—five days of rainy weather succeeded; during this period the bees were prevented from flying abroad; I fed them nightly with sugared ale, and before the return of fine weather a considerable quantity of comb was formed. Now excepting such materials as the bees might have brought with them from the parent hive, in this case, the sugared ale alone must have been the source of the wax. Huish has remarked that unless bees have access to water, and also to sugar or honey, no comb can be formed. Again, it may be observed, that upon the storifying plan, when fresh works are commenced in the duplets or triplets, if the farina were the basis of the combs, an increased quantity should be carried in. On the contrary, though I have watched the bees very minutely on these occasions, I scarcely ever witnessed the introduction of farina; and in such rare instances as I did observe it, it might fairly be regarded as food for the young larvæ of the bees contained in the full box or boxes.

The observations of Mr. John Hunter tended to confirm this view of the matter; still more so, those of M. Huber and son. In order to determine the point with greater precision, Huber instituted many experiments. On the 24th of May he lodged a recent swarm in a straw hive leaving at its disposal only a sufficiency of honey and water for its consumption, and preventing it from going beyond the precincts of a room, so closed as to admit only a renewal of the air.* At the end of five days as many cakes of beautifully white, though very fragile, wax were suspended from the roof, the honey had totally disappeared. Still, however, as there was a possibility that the thighs and stomachs of the bees might have conveyed pollen from the parent hive, he withdrew these five combs, and replaced the bees in the hive with a fresh supply of honey and water; they renewed their toil with unabated industry, and soon fabricated new combs: these last were taken from them; when the patient and indefatigable insects commenced a third structure of comb. Five times in succession were their works thus completed and removed, although during the whole of this period they were fed merely with honey and water, and could not possibly have had access to farina.

These experiments, so uniform in their results, give indubitable validity to the fact—that honey, through the organic intervention of bees, may be converted into wax. A contrary experiment was made, by abundantly supplying a hive with fruit and pollen only: but during eight days' confinement the bees produced no wax whatever, nor exhibited any plates under their abdominal rings; no combs were formed, nor was an atom of farina touched—a clear proof that farina supplies neither wax nor sustenance to adult bees. The improbability of this indeed is evinced by its abundance in hives whose tenants have died of famine. And as to its being the constituent of wax, Reaumur calculated that a well-stocked hive might collect at least 100 pounds of pollen in a season, whereas the weight of wax fabricated in the same time would not exceed two pounds.

Experiments have proved the excellence of sugar as a substitute for honey, and in some instances its superiority, for the formation of wax. It might otherwise have been supposed that bees might form comb from some particles of wax accidentally present in the honey, and that these afforded the pabulum for this secretion. To prove, therefore, that the saccharine principle alone enabled the bees to produce wax, being still confined, they were supplied with a syrup made with Canary-sugar and water, and at the same time comparative experiments were made in another hive, where the bees were fed on honey and water. The syrup-fed bees produced wax sooner and more abundantly than the honey-fed bees. Another fact was also incontrovertibly elicited; namely, that in the old hives the honey is warehoused, and that in the new ones it is consumed and trasmuted into wax.

The experiments of Huber have been confirmed by those of M. Blondelu, of Noyau, who addressed a memoir upon this subject to the Society of Agriculture at Paris, in May, 1812.

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*To prevent the bees from being impatient, it was found necessary to conduct the experiment in a cool place, as well as to exclude the light.

Huish has critically examined these experiments of Huber, but without being convinced by them ; for having observed pollen on the thighs of bees when swarming, and upon dissection, in their stomachs also, he considers that pollen, elaborated in the second stomach of the bee, "contains in itself the principle of wax" Were this the case what a store of pollen must the bees have reserved in Huber's experiments, wherein they formed five successive sets of comb, without access to fresh pollen! The pollen or bee-bread, which Huish discovered on the thighs and in the stomach of some of his bees, was most likely imported by such of them as being on the return home at the time their companions were swarming, joined the throng with that freight which was intended for larva-food in the hive. With this pollen (or ambrosia, as it has been called,) after conversion into a sort of whitish jelly by the action of the bee's stomach, where it is probably mixed with honey, and then regurgitated, the young brood, immediately upon their exclusion from the ova state and until their change into nymphs, are fed by the nursing-bees several times a day. The opinion that pollen is the prime constituent of wax was held by Buffon, and remains uncontradicted in an edition of his works so late as 1821. Arthur Dobbs, Esq., in the Philosophical Transactions for 1752, instead of considering wax as digested pollen discharged from the stomach of the bee, regards it as being emitted *per anum ;* and as he speaks of its discharge in husks or shells, doubtless he saw it in that form, which it is now known to assume when moulded upon the body of the bee. Indeed he says that he has had swarming bees alight upon his hand, and drop warm wax upon it. Its being secreted only by the under side of the belly might easily deceive, and lead him to regard it as alvine excrement. That minute and accurate observer Butler, though evidently not aware of the secretory process by which wax is generated, noticed that in fresh swarms, the bees came in without any pollen upon their thighs, and therefore supposed the mouth to be the vehicle for conveying it. "When they gather abundance of this stuff," (pollen) "they have never the more wax; when they make most wax, they gather none of this." Butler even remarked that old stocks gather much pollen, and fresh ones little ; because the stocks have larvæ to feed, whilst the swarms have none.

I will here subjoin some more proofs of the nonidentity of wax and pollen. So long ago as 1768, the Lusatian Society (called *Societe des Abeilles*, founded at Little Bautzen, a village in Upper Lusatia, under the auspices of the Elector of Saxony,) knew that wax was not discharged from the mouths of bees, but was secreted in thin scales among their abdominal rings or segments. About 1774, Mr. Thorley caught a bee just entering its hive, and found, among the plaits of its belly, no less than six pieces or scales of solid wax, perfectly white and transparent, and he oftentimes saw wax in the same situation. M. Duchet, in his *Culture des Abeilles*, quoted by Wildman in 1778, declares that wax is formed of honey ; and relates in proof of it, that he has seen a broken comb of an overset hive, which was repaired during bad weather, when the bees could not acquire any other material. This statement of Duchet corresponds with my own observation, heretofore made, but is not so conclusive. In Duchet's instance there might have been other materials in the hive besides honey ; whereas in my case the bees had access to no materials whatever, excepting the sugared ale and the honey which they had conveyed from the parent hive, the swarm having been just hived. Butler and Wildman state their having seen pieces of wax like fish scales, on the hive floor of fresh swarmed colonies, part of which, at least, they both thought must have been formed upon the body of the bee ; for though some flakes might have fallen from the combs then constructing, there were many pieces among them which were concave on one side and convex on the other, as if moulded on the insect's belly. Flakes were likewise seen hanging loose, between the abdominal scales of the bees. In 1792, Mr. John Hunter, apparently unacquainted with antecedent conjectures, detected the genuine reservoir of wax under the bee's belly. He considered wax as an external secretion of oil, formed and moulded between the abdominal scales of the insect. Dr. Evans confirms the testimony of Wildman and Hunter. "One or more bees," he remarks, "may be often seen before the door of the hive, supporting themselves by their two fore feet, fluttering their wings, and agitating the hind parts of their bodies. They are then evidently moulding the wax between their abdominal scales, the motion of the wings serving to preserve their balance, and as a signal for their companions within to come and carry off the falling flakes, to the formation of which he was an eye-witness."

To complete the evidence, however, to me so irresistible, in favor of the wax-secreting faculty of the bee's body, I observe finally, that in 1793, M. Huber's observations led him to the same conclusion as Mr. Hunter's, relative to the nature of the laminæ under the abdominal scales : but Huber slumbered not there ; he prosecuted the inquiry more successfully than any preceding naturalist, and at length demonstrated the secreting organs which had eluded the scrutiny of Swammerdam, Hunter, and other acute anatomists. He found that these laminæ were contained in distinct receptacles, on each side of the middle process of the scales ; he examined, with great care, the form and structure of these secreting cavities, which are peculiar to working bees. Each working bee has eight of these organs, sacklets or small compartments. Their general shape is an irregular pentagon, and the plates of wax being moulded in them, exhibit accordingly the same form. A perforation of their lining membrane on the side next to the abdomen, started a jet of transparent fluid, which congealed on cooling ; in this state it resembled wax, and became again fluid on the application of heat.

Comparative experiments were made with the substance contained in the pouches and with the wax of fresh combs ; a great similarity between these two substances was discerned ;

the latter appeared somewhat more compound, having probably received some additional ingredient, while employed as the material for building. The secreting function of the membrane on the inner surface of these cavities, was further evinced by a more minute examination of its structure, which exhibited a number of folds, forming an hexagonal network, analogous to the inner coat of the second stomach of ruminating quadrupeds. Huber does not appear to have known the observations either of Duchet or of Wildman on this subject, although they were made long prior to Mr. Hunter's; for he quotes only from the latter.

Whenever combs are wanted, bees fill their crops with honey, and retaining it in them, hang together in a cluster from the top of the hive, and remain apparently in a state of profound inactivity, about twenty-four hours. During this time, the wax is secreted, and may be seen in laminæ, under the abdominal scales, whence it is removed by the hind legs of the bee, and transferred to the fore legs; from them it is taken by the jaws, and after being masticated, the fabrication of comb commences. In swarms it may, and sometimes does, commence immediately after hiving, thus affording evidence of preparation, and consequently of intention to swarm.

"To see the wax-pockets in the hive bee, you must press the abdomen, so as to cause its distention; you will then find, on each of the four intermediate ventral segments, separated by the carina or elevated central part, two trapeziform whitish pockets, of a soft membranaceous texture; on these the laminæ of wax are formed in different states, more or less perceptible."* Eight scales are thus produced at once, a pair under each ring, except the first and last, which are constituted differently from the rest. The size of the scale varies with the diameter of the rings, on which they are moulded; the largest being beneath the third, the smallest under the fifth ring.

"Non labor omnibus idem," says Vaniere. Messrs. Huber and son have affirmed that the office of collecting honey, for the elaboration of wax, is filled by a particular description of bees or laborers, to which they have given the name of *wax-workers*. These bees are susceptible of an increase in size, as is evident from the state of their stomachs, when quite full of honey. Dissection has shown that their stomachs are more capacious than those of the bees that are differently occupied. Bees not possessed of this expanding stomach, gather no more honey than is necessary to supply the immediate wants of themselves and their companions, with whom they readily share it; they seem formed for retirement, and are called *nursing bees*,† their duty being to rear the young, and attend to the internal economy of the hive. The task of storing with provisions devolves upon the wax-workers, who, when not occupied in the construction of comb, disgorge the honey into those cells which are intended for its reception. By marking the bees, it was found that they never encroached upon each other's employment; this strict adjustment of duty is the more remarkable, since the power of producing wax is common both to the nursing and wax working bees, a small quantity of wax having been actually found in the receptacles of the nursing bees. The difference between these bees had probably been observed both by Aristotle and Pliny. That such difference actually exists, is confirmed by the observations of Mr. Newport on humble bees; he witnessed their mode of raising the temperature of their domicile some hours before the perfect maturation of the brood, and found there was a successive change of nurses, as soon as the heat of those in attendance became lowered by perspiration.

In the foregoing experiments for ascertaining the sources of wax, the bees had borne their confinement without evincing the least impatience; but on another occasion, when shut up with a brood of eggs and larvæ, and without pollen, though honey was copiously supplied, they manifested uneasiness and rage at their imprisonment. Fearing the consequence of this state of tumult being prolonged, Huber allowed them to escape in the evening, when too late to collect provisions; the bees soon returned home. At the end of five days, during which this experiment was tried, the hive was examined: the larvæ had perished, and the jelly that surrounded them on their introduction into the hive had disappeared. The same bees were then supplied with fresh brood, together with some comb containing pollen; very different indeed was their behaviour with this outfit; they eagerly seized the pollen and conveyed it to the young; order and prosperity were re-established in the colony; the larvæ underwent the usual transformations; royal cells were completed and closed with wax, and the bees showed no desire to quit their habitation. These experiments afford indisputable evidence of the origin of wax, and the destination of pollen. Butler observed that there was a great increase in the members of the hive, after pollen was carried in, which he supposed rendered the queen prolific.

Though the wax of honey and brood-comb is an original secretion from the body of the bee, wax is also considered by some as a vegetable substance existing abundantly in nature. According to Proust, it forms the silvery down on the leaves, flowers and fruit of many plants, and resides likewise in the feculæ of others.

Dr. Darwin, in his *Phytologia*, supposes that wax is secreted to glaze over the fecundating dust of the anthers, and prevent its premature explosion from excessive moisture: to an unseasonable dispersion of anther-dust he ascribes the failure of orchard and corn crops in summers of extreme humidity. The wax tree of Louisiana. *Myrica cerifera*, contains immense quantities of wax. In this respect there appears an identity betwixt animal and vegetable secretion, which may be viewed as indicative of simplicity in the structure of the bee: a still simpler organization exists in the aphis, which extracts the saccharine juices from the leaves and bark of trees, and expels them again nearly unchanged.—*Bevan.*

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*Kirby and Spence.

†Later observations have shown there is really no such rigid division as wax-workers and nursing-bees, the different duties being performed by the same bees in different stages of their existence.

[From the Maine Farmer]

Popular Whims.

Messrs. Editors:—You are men of sound judgment and if perfectly agreeable to you I would like to have the benefit of your opinion, in regard to some of the "whims" and peculiar ideas so prevalent among some classes of people, and particularly among farmers. Now, I will not insult your intelligence by asking if you believe in any such thing as "killing hogs," "planting peas," &c., on the "full of the moon," or that most absurd of all absurdities, putting an odd number of eggs under a hen so that she may be more successful in bringing forth her brood; but there is an idea in regard to bees that perhaps admits of an argument. It is said that bees will not do well when kept by a family where they have "broils," and also if any one of the family dies and the hive is not "dressed in mourning" the bees will leave. Now let me give a few cases that have come under my observation. A family—where they kept bees—was called to part with a loved one. The funeral ceremony was over and the procession started from the house, and had gone but a few rods when they saw the bees following them, they stopped, went and dressed the hive in mourning and the bees returned. Another case was this: A family received the sad news that their son was killed in battle. In a short time (I do not know the exact number of minutes) there was a stir among the bees, and they were preparing to leave. The hive was appropriately decked, and they resumed their labor perfectly contented. In another instance, a young man died. The funeral took place at the house, after which the body was carried away twenty-five or thirty miles, no procession following. No action was taken in regard to the bees, and strange to say, they did not suspend operations; and the reason assigned was that no procession was formed. In the same family, the husband died, and the bee-house was not decorated, and of course the bees refused to work. The wife went out near the hive and said, "your master is dead; now you must work for me.". They immediately went to their work as busily as before.

Now, that these little creatures have a high degree of intellect, we do not doubt; while as to architecture they have a knowledge that a master workman might envy; yet I pray you tell me, how can they know whether a family is happy or not? We cannot surely charge them with being eavesdroppers—they are too industrious for that—and I hardly think they are possessed of the faculty of reading faces, and in that way find out the family affairs. Or can you believe that they know if I receive bad news? And can we suppose, that we may converse with them, or rather *to* them? What I have related are simple facts, and there is an air of mystery about it, that I cannot fathom; yet I do not, can not, believe the general idea in regard to them. Please give your opinion and oblige. C. B. M.

Upper Stillwater, May 27, 1867.

Note. 1—We have so often given our opinion concerning the so called influence of the moon upon vegetation, the boiling of meat, the decay or preservation of timber, &c., that it seems hardly worth while to repeat it. However, to satisfy our correspondent we will say briefly that we do not believe in any such influence. The light of the sun flashes ninety five millions of miles and strikes upon the moon, shining upon it equally all the time. A part of the time we upon this planet see the shade, and a part of the time the reflection of the sun's light But why this faint shadow, more than two hundred thousand miles off has any more to do with the growth of pea vines, the shrinking of meat boiled in a pot, or the decay or preservation of timber, than the barking of a dog in China has on the churning of cream in Nova Scotia, we acknowledge ourselves too ignorant to perceive.

2—The superstitions regarding bees, are quite as familiar, and some of them seem certainly mysterious. Quinby in his book about bees has not a word to say about the matter, though he could not have been ignorant of the reports of similar occurrences to those mentioned by our correspondent. Langstroth devotes half a page to what he terms superstitions about bees, mentioning a number of incidents like those just related by our correspondent. One of them is as follows: "A clergyman told me that he attended a funeral, where as soon as the coffin was brought from the house, the bees gathered upon it so as to excite much alarm. Some years after this occurrence, being engaged in varnishing a table, the bees alighted upon it in such numbers, as to convince him, that love of varnish, rather than sorrow or respect for the dead, was the occasion of their conduct at the funeral." We leave this matter at present, with the remark which Mr. Langstroth makes in his book, "The Hive and the Honey Bee," after relating the above instance: "How many superstitions, believed even by intelligent persons, might be easily explained, if it were possible to ascertain as fully all the facts connected with them!"—Editors Maine Farmer.

A hive should contain at least twenty pounds of honey for its support during winter; but it is a mistake to suppose that an *increase of number* in the hive, produced by *union*, will require an increased supply of food. In fact, precisely the contrary is the case; and the more abundant the stock of bees in autumn, the richer and the better able to work will they be in the spring—the more forward, therefore, will they be in summer, and the greater will be your profits.—*Richardson.*

Honey may be *clarified* by placing the vessels containing it in hot water, and continuing to skim as long as any scum arises. In order to preserve honey, it should be stored in jars, well bladdered and otherwise secured; and kept in a dry place.

THE AMERICAN BEE JOURNAL.

WASHINGTON, JULY, 1867.

☞ THE AMERICAN BEE JOURNAL is now published monthly, in the City of Washington, (D. C.,) at $2 per annum. All communications should be addressed to the Editor, at that place.

☞ THE third volume of the AMERICAN BEE JOURNAL, of which this is the first number, we are gratified to believe, commences under more favorable auspices than either of its predecessors. There have been considerable accessions to our subscription list within the last two weeks, and a warm interest manifested for the success and permanent establishment of the paper. This is encouraging, and shall be met by corresponding efforts on our part. We have arranged to receive an additional number of foreign periodicals and publications, and shall thus have increased facilities for furnishing our readers with early information of whatever improvements or advances in practical bee culture are made abroad.

IN an essay on "*American Fruit*" by Dr. Porsch, General Secretary of the Horticultural Society of Bavaria, published in the *Frauendorfer Blætter* in June, 1848, it is alleged that "the first hive of honey bees that was carried to North America, came from Germany." The authority on which this statement was made, is not given ; but we shall endeavor to ascertain it.

Melilot Clover.

This plant is strongly recommended for bee pasturage, in this number of the BEE JOURNAL, by one of our correspondents ; and the last number received of the *Bienenzeitung* contains a communication from Mr. F. Bahr, of Saxony, which gives it a high character, both as a honey-yielding and a forage plant. If it combines the two qualities it may receive favorable attention in this country from farmers residing where soil and climate are suited to its growth. It is not to be expected that any crop will be extensively cultivated here merely for bee-feeding purposes. In good soils, some substitute for red clover is needed, which, in addition to the nutritious and ameliorating properties of that crop, shall furnish supplies of honey available to the bee, and offer besides some special advantages which may cause it to be selected in preference. In some localities Alsike or Swedish clover, it is thought, will be found to answer this purpose. In others, perhaps, Melilot clover may prove available. In poorer lands and sandy districts, moreover, some plant is required which shall there supply the means of improving the soil, furnish forage for stock, and yield honey for the bees. In such districts in Germany, a plant called Serradella (*Ornithopus sativa*) has been introduced from Spain, and is successfully cultivated. There is much thin and sandy land in this country, especially along the seaboard of the Southern States, where this plant might prove to be, in all respects, a highly valuable acquisition.

For the American Bee Journal.

Bees, and Allen's New Patent Hive.

This is an age of utility and improvement, especially in material things. Contrasting the state of the world fifty years ago, with its present advanced position, we are struck by its rapid progress in the useful arts. Inventions of all kinds in every department of labor, inventions many of which greatly facilitate work and shorten the time of its performance, are the order of the day, and all the various branches of industry are constantly receiving new impetus and fresh acquisitions from increased mechanical skill. This is as it should be. Progress is a necessity of our nature, a requirement of our condition, by which our energies find employment and our wants are supplied ; and he who thus tries and succeeds, is a public benefactor. The man who causes two spears of grass to spring up where but one grew before, or saves time and hand work in the performance of labor, or increases useful productions of any kind, deserves the gratitude and thanks of his fellows. But if any such improvement is deserving of credit and reward, much more is that which is the best of its kind, which is not only an advantage to the world, but the greatest benefit of which the subject is susceptible or at least has hitherto received. These thoughts were forcibly suggested the other day by an examination of Mr. T. R Allen's model for a new hive, truly called "The Home."

The cultivation and improvement of bees with reference to the production of honey, is an old and honorable occupation which has done much to sweeten the acidity of life. Honey has always been taken as the type of sweetness for the taste, and has even been supposed to clear the intellect. "Butter and honey shall he eat that he may know how to refuse the evil and choose the good." It is said of Sophocles, a Greek writer of great sweetness, that the bees settled on his lips in the cradle. Virgil devoted a whole book of the Georgics to an accurate and minute description of bees, their habits and right management as practiced in his time, showing that the ancients highly appreciated the importance of this little insect in contributing to their wants and enjoyments. And the moderns have improved in this case, as in almost all others, upon the old models, having studied the bee with close inspection and rigid thoroughness ; stimulated thereto not only by the gratification of the palate, but also by pecuniary advantage, since the making of honey is highly profitable.

Next to a due supply of food, the home of the bee is of greatest importance. This should be so constructed as to fulfil two main indications; the one, that it be suited to the insect's just requirements of labor and rest, and really be a snug and comfortable home in which it may live well and work comfortably ; and the other, that the apiarian should have easy, safe and quick means of performing all his operations.

While the hives in common use—Langstroth's and others—fulfil to some extent these conditions, that of Mr. Allen, combining as it does, their advantages, and leaving out their defects, as well as presenting some new features of its own, may claim as we think with justice, a clear pre-eminence.

Without stopping to describe all its good points, or dwell upon any, we will merely indicate two new and important additions possessed exclusively by this hive.

These are first, an entire movable outside, capable of easy and safe removal and replacement. On all other hives this is a permanent part of the hive, except indeed, the top or cover.

The advantages of Mr. Allen's plan are that the whole interior of the hive is better exposed to the view and manipulations of the apiarian, and less disturbance of the swarm by blows or motion of any kind.

But perhaps the most important improvement consists in the frame work and frames. The frame work (best made of cast iron) is so constructed by means of bevels or hinges at the top, and sacks at the bottom, that the frames are securely fixed at proper equal distances from each other, while they may be easily withdrawn through each side, instead of being lifted out as is the case in other hives. But we are running on at length, induced by the seductioh of the subject, and will close by inviting all interested in bee-culture to call at No. 182, E. R. R. Streets and examine Mr. Allen's model. If such are not repaid for their time and trouble, we shall be much disappointed.

Wm. A. Bennett.

Syracuse, May, 1867.

◆

Age will cause hives to weigh heavier than their *legitimate* contents would call for. This is caused by an accumulation of *bee-bread*, or pollen, in the cells, and also of the cast slough which formerly served as envelopes for the young. In the case of old hive, therefore, an allowance of from two to five pounds must be made for these matters, according to age, when endeavoring to estimate the honey contents of the combs.

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Snails and slugs are not to be classed among the true enemies of bees, as they have no design upon them or their honey in entering the hive, but merely do so from accident. The mischief done by them consists in the alarm and confusion they occasion.

Facts about the Honey Bee.

EXTRACTED AND TRANSLATED FROM DR. ED. ASSMUSS.

When a hive swarms, the young bee colony generally gather together, before going farther, in the vicinity of the parent hive, in order to rally and to rest, as they are heavy with the honey taken along for the voyage. The place for this is chosen by the workers, not by the queen, as was formerly generally believed, and is mostly a densely leaved low shrub or tree, of which more hereafter. It occurs but seldom that the colony does not gather in this way, but flies off at once.

Sending out Reconnoitrers.—When the colony has rested in this way for a time, they despatch a few workers, reconnoitrers or quartermasters so to say, who search for a new habitation, and, when they have found one, guide and direct the colony to it. Sometimes the new habitation is selected already while the intended colony still remain for a time in the parent hive ; this is done especially by first swarms.

Clustering in the new Habitation and the first Occupations.—The swarm on entering the new habitation, suspends itself from the top or ceiling in the shape ot a cluster of grapes, which is formed by a great number of garlands crossing each other in all directions, each containing a greater or lesser number of bees according to the size of the garlands ; these are formed by the first two bees clinging with their forelegs to the ceiling of the hive, the next two with their fore-legs to the hind legs of the two first ones, and so forth. Their first occupations are—to cleanse the habitation, to make wax for building material, to reconnoitre the new environs in order to fly out safely after forage. These are the only occupations for the first two or three days.

Reconnoitering, Circle of Flight, and Eyes of the Bee.—The bees reconnoitre by describing a small circle around the hive, which grows larger and larger, and they do not fly off until the hive, its location and environs are thoroughly noticed. The circle of flight of the bees has, according to recent careful observations, a radius of half a German mile (equal to 2½ English miles.) This remarkable and extraordinary ability of the bee to find her way is owing to her five eyes. Two of these stand on the side of the head, are large kidney-shaped, and composed of many thousand of hexagonal convex facets adjoining each other, like the meshes of a net, each facet representing a separate eye, and which are divided by a few single hairs. Because of this construction, they are called composite, faceted, or net eyes. Those of the male are larger, and touch each other, as mentioned before, on the top of the head ; the facets are also larger than those of the queen and the workers. The other three eyes consist of a single hemispherical horny skin, like three little knobs standing in the form of a triangle, the apex forward, the base behind. As mentioned before, these eyes the males have on the forehead, the queen and the workers on the top of the head. All these eyes are provided with nerves from the two nerve centres of the head which may be designated as the brain of the bee. The eyes are constructed only for seeing in the daytime; in the dark the bees are blind.

Cleansing and Preparing the Habitation.—This consists in the workers biting off all uneven or protruding parts, as splinters of wood, pieces of straw, etc, and is done by means of their strong mandibles. In most cases these gnawed off parts are thrown from above to the bottom of the hive; and only later, when the bees have made more progress with their structure, do they cleanse out the bottom. Some of it, however, is carried out at the time it is gnawed off.

The Production of Wax.—At the same time with the cleansing of the habitation commences the production of wax. The wax is a secretion of the body of the bee, and is formed only when the bee is richly provided with food, like fat in the higher animals but with this difference that while fat grows upon the animals without their knowing it, the production of wax is entirely optional with the bee. It is fully within the power of the bee to make wax or not to make any. In order to produce wax, the worker-bee takes in considerably more pollen and honey both of which constitute their food, than is necessary to appease her hunger. In the chyle-stomach or stomach proper, these materials are first transformed by a partial digestion into food, sap, or jelly, which has been mentioned already as the food of the drones and the queen, and this is after twenty-four hours thoroughly digested and passes into the blood, from which it is secreted as wax, in the form of thin, irregular pentagonal white flakes, looking like selenite, between the segments of the abdomen through the thin wax skin of the bee into a separate apparatus.

The Wax-Secreting Apparatus is on the lower side of the abdomen, and is formed of the four inner segments out of the six; these four inner segments consist of two parts, the interior being a thin, soft, translucent skin or membrane, the posterior a harder, darker skin, covered on the outside with hair, the first or soft part is surrounded by a horny rim, with a point on each side. Through the centre of the wax-secreting apparatus runs a horny partition, dividing it into two equal parts, whereby these four wax secreting segments form eight superficies, which, as the apparatus is oval, are larger in the middle, at the third segment and smaller towards both ends. In shape, these superficies form irregular pentagons. The horny rims of the wax skins or membranes are connected by a delicate membrane with the next segment, and the wax skin itself is drawn back under the hard outer skin, so that the eight superficies form four pairs of pockets, into which the wax substance penetrates through the wax skin or membrane, and receives the shape and size of the respective superficies.

As soon as the secretion of wax has commenced, the bees begin at once to use the wax flakes for the construction of comb. This comb building always has its beginning at the ceiling of the hive, in the centre of the cluster of bees.

For the American Bee Journal.

Purity of Italian Bees, and other Matter.

Mr. Editor: There is so much said and written about the purity of Italian bees that a person who reads your Journal and would wish to procure these bees in their native purity, must either be greatly puzzled to know in what this purity consists, or blindly believe that anything in the shape of a bee, differently colored from the black, is pure, provided it cost him ten or twenty dollars, and he has obtained it from a person that can blow his horn the loudest. The aspersions and inuendos thrown out by certain pedlers in this commodity, and the ignorance and conceit exhibited by others who poke themselves before the unsuspecting good people, as their quasi judges and teachers in apiculture, are, indeed, to me at least, very refreshing. The way they prepare for a successful sale, is all that could be desired in their favor, and the cash they covet induces them to pave the road to success with innumerable stumbling blocks. One seems to think that because he has written a book on bees, the good people take what he says as a matter of the utmost reliability. To make assurance doubly sure he informs his correspondents that: "If the workers of any queen do not show distinctly *the yellow band*, she is considered impure by the best apiarists, and should not be expected to breed pure queens: * * * and that it will probably appear that some which show the three rings distinctly when the abdomen is filled with honey or otherwise distended, will often show but one distinctly when it is empty or contracted, as is evident from workers that *he* has raised from a tested queen procured of Mr. Langstroth." This gentleman, and another like him, to form the plurality, are evidently and obviously figured here as the *best apiarists;* but to *my* certain knowledge, the best apiarians always speak of *three yellow rings*, and so does Mr. Langstroth.

Another is greatly pleased when he can raise and represent in wood cuts, and recommend by circular and otherwise, *big* and *beautifully yellow* Italian queens. This person is honest enough, and would of a certainty pick the only hybrid queen from a dozen pure ones, as he has evidently never seen a pure one in his life. A third thinks his tested Langstroth queen produces black queens, when either the original pure one was killed off at its introduction, or Mr. Malapertus neglected to destroy the queen cells a week or so after its introduction, and the top swarm, with the Langstroth queen, flew to the woods, while its owner finds, by his afterswarm, that Mr. Langstroth's tested queen produces black queens.

A fourth still goes one step further, and by implicitely advertising Italian queens for sale, informs the good people at the same time, with an assurance most persuading, that he bought three queens from Mr. Langstroth, one of which he tested for breeding, and raised three *splendid yellow ones.* And here let me add, sir, that these three *splendid yellow ones*, however like they may be to any in his apiary, are, notwithstanding, according to my experience, not at all pure, for the very reason that pure Italian queens are not like hybrids *splendid*, nor like hybrids *yellow*, but brown, with a black dot or two upon the body.

Now, if either Mr. Quinby, or Mrs. Tupper, or Mr. Grimm, or Mr. Flanders, or Mr. anybody else knows of no better and more reliable test of purity than what they advance by paper cuts or yellow bedabbled wood cuts, in your JOURNAL or otherwise, I would here as publicly as they advertise, yet most respectfully, suggest that neither and none of them have any *pure Italian* queens, no matter from what source they may have obtained them, and no matter whether their workers have, like Mr. Quinby's *one yellow band*, or like Mr. Langstroth's *three yellow rings.* And now, I shall proceed to state what, in my humble opinion, constitutes the only true and exclusively reliable test of purity in Italian queens, to wit: *Impeccability of temper in their worker progeny*, in addition to the distinctive *three yellow bands* by which they are known in Italy and Switzerland. Tut! Tut! Gentlemen, I have no queens for sale, nor would I sell a *pure queen* for less than twenty or thirty dollars, if I had a tested one to spare. I have raised sixteen flying ones and none impure; nor have I any Italian bees that will sting, or need sugar water or smoke, or bee charm, to keep them quiet. When I open the hives, those that are between the frames and honey-board will range themselves, "rank and file," with their heads even with the top bar of the frames, and there look at me as if to say: How do you do, sir? None will leave the comb without shaking, and hardly then, and in the *comb-ical* tenacity, I discover another comparative and tolerably sure test of purity. The *one-banded* Italian bees (?) that by the slightest twitch of a nerve, drop from the comb like so many kernals of hybridized corn, are not any more pure than those kicking, long-eared, tufty-tailed, dissyllabic ponies (?) are pure horses—both are "an abomination unto the Lord"—an abuse of nature and a curse in a quiet homestead. I have repeatedly, with one naked hand, brushed my bees from the alighting-board into the other, and thrown them, by permission of visitors to my apiary, into their naked faces, or my own, without a single sting. I have come across them in my pant's pockets, in my trowserloons, and in my bed, without a single sting. I have spit among them, dropped the burning embers from my cigar among them, and dropped the bees themselves alive upon my tongue without a single sting. I actually sat down, in a pair of linen pants, upon the frames, by mistaking the open for a closed hive, during conversation with a friend, and thus broke down the whole fabric without one single sting. With my bees the original report of their inability to sting is strikingly verified; hence I must conclude that my bees are the *pure Italian bees*, yet their mothers are neither *splendid*, nor *yellow*, nor yet *black*, but *dark brown*, with a very diminutive black dot or two upon their posteriors, yet withal much smaller than *genuine hybrids queens* and very handsome.

Now, gentlemen, I have queens from two different sources; the first from Rev. L. L. Langstroth & Son, and the others from a Swiss cousin who imported them by my request (not expressly) from his own yard, where he assures me they were raised without especial care or attention. Both Langstroth's and the other queens have so far invariably produced mothers and workers so nearly alike in color, shape, and disposition, that a good judge might readily mistake one for the other. Of Mr. Langstroth's queen I have just raised the third generation as to mother from mother, and all, without one single exception, have turned out pure. Of the Swiss, I have only the first generation tested, and trust their progeny may prove as pure and give me as much satisfaction as their progenitors.

Raise more drones, gentlemen, raise fewer queens, test them with a view to *impeccability of temper*, and distinctive coloring *exclusively*, and when you sell, charge bigger prices, and you will give *bigger satisfaction.*

I am, gentlemen, respectfully and disinterestedly, yours,

PROF. F. VARRO, A. M.

CANTON, PENNA., JUNE 15, 1867.

[For the American Bee Journal]

I fully concur with M. S., of New Salem, Ohio, in the remark concerning smoke. I have fully proved the smoke of wood to be quite sufficient for all purposes. But a simpler plan of using it than that given by M. S., is to split your rotten wood into pieces of from four to six inches long and say about an inch in thickness; though size or shape is of no great consequence in practice. Then light one end, hold it by the other, and blow the smoke among the bees. All the smoke pipes in the world sink into insignificence compared with it. Try it and I am sure you will use nothing else. But when rotten wood is not convenient, a few chips put in a common tin pie pan and a coal laid on them, will answer. J. H. THOMAS.

BROOKLIN, C. W.

Liberian Honey Bee.

In a barrel of molasses brought over by the American Colonization Society's ship Golconda, on her last voyage, were a great number of honey bees. Being struck by their bright colors, I took several specimens home, and after cleaning them, their markings were very striking. On the back part of the thorax there is a yellow crescent, the rest of the thorax being very black. The first three rings of the abdomen are yellow, like those of the Italians. The othes rings are black, with white borders, so that the general effect is very beautiful.

The bee is somewhat smaller than the black and Italian varieties.

D. M. WORTHINGTON.

ELKRIDGE, MD., JUNE 6, 1867.

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[☞ The agency of bees in the fertilization of blossoms has recently attracted much attention, and has been largely discussed particularly among bee-keepers. It is manifest that crude and erroneous views respecting it are prevalent even among people in other respects highly intelligent. With the design to aid in correcting some of these, we copy the following interesting article from a late number of that able and useful periodical, the *American Naturalist*, issued monthly at Salem (Mass.)—a publication deserving of efficient and liberal patronage from the lovers of natural science in all parts of the country] :

Agency of Insects in Fertilizing Plants.

BY W. J. BEAL.

Mr. Charles Darwin and other botanists have proved beyond a doubt, that some flowers, in which the pollen may easily gain access to the stigma of the same flower, are sterile unless fertilized by pollen borne from other flowers, while many are much more productive by a cross fertilization.

For information concerning the peculiar manner in which fertilization is effected in the Balsam, Wood-Sorrell, Violets, Dicentra or Dielytra, Corydalis, Mitchella or Partridge-berry, Oldenlandia or Houstonia, Primrose, Barberry, Lysimachia or Loosestrife, Orchids, Dutchman's Pipe, and others, consult the observations recorded by Mr. J. T. Rothrock in the second number of the *Naturalist*, Mr. Darwin's work on the "Fertilization of Orchids," and seven articles by Dr. A. Gray in the *American Agriculturist*, beginning in May, 1866.

With the fact that insects are necessary to fertilize some plants, and the theory that all are improved by crossing, let us see how this is accomplished in plants which may not seem to require the aid of the wind or insects. Plants are very rarely found in which the pollen may not, occasionally at least, get to the stigma of another flower of the same, or an allied species. Then if the pollen is "prepotent" or most effective on stigmas when thus transferred, a cross is very sure to result, even though much pollen comes in contact with the stigma of the same flower. Dr. Gray, acquainted with the facts, and familiar with the structure of the Iris, saw that insects must be needed for the fertilization of this plant also, and without seeing the bees upon them, shrewdly pointed out the manner in which they must carry the pollen from one flower to another. We verified his theory by observations made two years ago, and found it to be true in the essential particulars.

Without giving a scientific description of the flower, it is enough for our present purpose to say, that the parts consist of three curved tubes, each just about large enough to admit a common honey-bee, being a trifle larger than a cell in her comb.

There is a showy crest, or attractive platform, projecting at the other end of each tube upon which the bee first alights. When going into the flower for the first time during the day, she is free from pollen. She brushes against a lid which hangs from above, not unlike an old-fashioned swinging door of a cat-hole, as sometimes seen about barns or corn-cribs. When farther in beyond the lid, she comes against the anther, which only discharges pollen on the side next to the bee's back. After getting what nectar she can at the lower end of the tube, she backs out again, pushing the trap door in the opposite direction. The outside of this door is the only part of the stigma upon which the pollen will produce any effect, so upon visiting the first tube no pollen adheres to the sensitive side of the stigma, although the bee leaves the place with her back well powdered. Calling at another tube, she dives in as before, this time dusting the outside of the lid with pollen which was brought from the tube first visited.

In the early part of June, I examined the common Blue Flag (*Iris versicolor* Linn.) at different times during the day, and always succeeded in seeing the bees at work while their heads and backs contained an abundance of pollen. In wilted flowers, and in some that were fresh, I saw bees occasionally get in and out at the side of the tube, without touching the stigma at all. Sometimes they went in the tube as first described, and then slipped out at the side instead of backing out. Several went on top of the flower and tried to find other ways to get at the sweets below, but in every instance they failed, and soon left that position.

At the Botanical Garden, Cambridge, Mass., I noticed bees on several foreign species of Iris, in some of which, as *Iris pseudocarus* of Southern Europe, the tube is more nearly perfect, so that it is impossible for them to find a side entrance or egress.

The corolla of *Andromeda floribunda* Pursh, is nearly urn-shaped, hanging with the open end or entrance down. The ten long anthers open at the apex by two round holes, and each anther is supplied with two horizontal or reflexed awns on the outside next the corolla. Bees in abundance visit the flowers, thrusting their long tongue or proboscis against the awns or horns of the anther, as they reach in for nectar which is secreted farther on. By hitting the awns the anthers are disturbed, and the holes brought close against some part of the bee's probocis, which is well sprinkled over with pollen, as well as the other mouth parts hanging below the flower. Bees were examined, and found to have the parts mentioned covered with the four-grained pollen which is peculiar to a few plants.

I cannot see how pollen alights on the stigmas of this plant, for in falling out in the natural way it must pass by to the ground. But the insect puts the material in place every time as effectually as a mason can stick mortar on the ceiling of a room. The Blueberry (*Vaccinium*) is similar in structure to the *Andromeda*, except that the awns are wanting. Probably most flowers which droop or hang down are fertilized by insects. For otherwise, how can the pollen find the tip of stigma, when the style is suspended?

The mode of fertilization in the American Laurel (*Kalmia*) has already been well described in the *Naturalist*, but I may be excused for adding my testimony concerning this beautiful and interesting plant.

When the anthers are liberated from the pockets in the corolla, the stamens suddenly straighten and throw jets of pollen often for a foot or more, "acting," as Professor Gray used to say, "like the boy's pea-shooter."

Many times when the dew was on, I have seen the common honey-bee and other *Hymenoptera* about these flowers. When the bee alights on a flower, the style comes up between the legs where they join the body, or sometimes farther back against the abdomen.

In this position they turn around, as though they were balanced on a pivot, generally inserting the tongue outside of the filament, and, while doing this, pull the stamens with their legs toward the centre of the flower, releasing them and frequently receiving the shots of pollen on their own body. A single visit from an insect is sufficient to release all the anthers. By noon it was a difficult matter to find a flower which had not been visited in this way. Insects seem to be absolutely necessary for the perfect fertilization of *Kalmia angustifolia* and *K. latifolia*, for I tied small nets over some flower-clusters, (*corymbs*,) and found that when the bees were kept away, the flowers withered and fell off, most of the anthers still remaining in the pockets, and the filaments so decayed that their elasticity was entirely gone. The very few anthers thus liberated were probably brought out by the shaking of the bushes by the wind.

Considerable pollen was found stuck on the corollas by the nectar, which was uncommonly abundant, as no insects of much size were allowed to remove it. The wind might have carried some of this pollen to other flowers, or it might have dripped from those above to flowers below in drops of water, (there were two showers during these experiments); but I infer this was not the case in the examples mentioned, because the flowers, especially the stigmas, remained fresh much longer than those which were left exposed to the visits of insects.

The flowers of several Honeysuckles, of the Mustard Family, (*Cruciferæ*), of the Bladdernut (*Staphylea trifolia* L.) were noticed, and in each case the conclusion reached was, that the chances are better for cross fertilization than otherwise.

The long cylindrical, bell-shaped corollas of the Purple Foxglove (*Digitalis purpurea*) are much visited by bees. The flowers are mostly obliquely suspended, and in all thus situated, the stamens and style are close to the upper side of the corolla. The insects alight at the opening of the corolla, on the side opposite the stamens. This is generally the lower side as the flowers hang, then reaching above, they catch hold of the style and stamens, and crawl in with the back down, brushing the whole length of the underside of the body, first against the stigma, and farther on, against the anthers.

They seem unable to get into the flower without catching hold of the stamens, and it is often with considerable difficulty that they enter at all, for they are obliged to hold on to the edge with the hind legs until they can catch the stamens with their fore legs.

In the Evening Primrose (*Oenothera glauca* Michx., *Oe. Missouriensis* and *linearis* Michx.) the stigmas project beyond the anthers, and the flowers vary from an erect to a horizontal position. There are four large stigmas for each style, spreading in the form of a Greek cross.

The pollen, slightly held together by delicate threads, is collected in the morning by great numbers of small wasps, about two-thirds the size of honey-bees. I have often watched them while coming down on, or just over, the stigmas, leaving pollen as they went in, and after collecting what they could, fly out at the side without touching the stigma. On one of these plants, at two different times, a wasp was eagerly trying to pick up the pollen which had been left on the stigmas; the more they tried to collect, the more they scattered pollen about on the glutinous surface, until, as if discouraged or disgusted, they rapidly cleaned their legs of all the tangled mass, and flew away, leaving that cluster of flowers entirely.

In the flowers of the Pea, False Indigo, Yellow-wood, (*Cladatris*,) Red-bud or Judas-tree, Red and White Clover, Locust, and others of this large and important family, (*Leguminosæ*,) anthers surround the stigma, and are closely covered by the corolla. This certainly looks like a very clear case of self-fertilization, but I doubt not the reverse is very often the case. Many of the flowers as the Pea and Locust, have one petal much larger than the rest, called the standard banner. Opposite this is another part composed of two petals sometimes united, termed the keel. On this keel bees uniformly alight, and crowd the head down next to the banner-petal. To enable them to do this, they kick the keel and side petals (wings) with their hind legs, and push them back so that the anthers and stigmas come out from their concealment and meet the underside of the insect where pollen may be left or received. Why the style should be uniformly curved upward, and all should be brought against the abdomen of insects, I cannot well conceive, unless it be of some use to the plant.

Lupine, another species in this family, has a remarkably long keel which makes a close sheath for the inside parts. On the style, just below the extremity, is a circle of long stiff bristles. As the keel is pushed down, only the stigma, with the bristles below, appears outside, and this pushes out a mass of pollen which generally hits some part of the insect. When left, the flower resumes its former position again.

For about six times pollen can be pushed out in this way, when the supply becomes exhausted. Insects begin on the lowest flowers, and so go up the spike to others which are higher and younger. No experiments have been made on Lupine to show whether it will produce more seeds when visited by insects than when protected.

BEE-KEEPING and bee management are in common with agriculture and the proper treatment of soils, yet in their infancy. But the time is probably not far distant when hundreds of colonies will be kept on improved systems in many districts where dozens of them cannot at present be found.

IT IS conceded that those localities which are suited to the cultivation of white clover and buckwheat, are also suited to the production of honey, and that where a poppy will prosper, a bee will prosper also: consequently there are few situations where bee-keeping might not be successfully prosecuted.

IN ALL plans and operations with bees, the laws of nature should be attentively observed and assisted, by which much may be experienced and acquired from attention and perseverance, and the results aimed at attained at less trouble and expense than if an opposite course be pursued.

BEES usually work more from eight o'clock in the morning till noon, than during the rest of the day.

For the American Bee Journal.

Experience of a Novice in Bee-Keeping—

No. 5.

I had read and re-read the instructions on Italian queen raising until I almost considered myself an expert in the business before trying it, and was impatient for the season to arrive to try my hand. About the 1st of April, I commenced by removing the best frames of brood from my Italians, who were yet far from strong, although healthy and doing well. The frame was put in my observatory hive so that we could inspect operations, and we were much gratified to find several queen cells had been started the next morning. As the weather was bad it became necessary to feed them, and all went on well until about a week after, when I forgot them so far as to let them get out of honey, so much so that they were mostly on the bottom board. The cells had been torn open and the brood sucked dry even to the queen cells.

I fed them a little honey at first to observe the effect, and observed that as soon as one got a taste he hurried to his suffering companions, giving each one a little, who, in his turn, performed the same office, until all became lively again, and then such a rejoicing and whirling about. I doubt if human beings rescued from starvation could have expressed more joy at the sight of plenty of food than did my bees.

This lot of queen cells were given up, and so they had a piece of first brood comb inserted.

This time we did not let them starve, but somehow their queen cell (they started but one) produced, after about 18 days, only a dead bee, having something in the shape of a queen, but only the size and appearance of a worker.

Another trial produced a similar result. I was considerably discouraged then, as far as early queen was concerned, and could not account for it, but now suppose it was owing to the small number of bees, as they had thinned down considerably, and the weather was so bad they perhaps could not get a sufficient supply of the proper food to furnish the royal jelly.

To make a sure thing of it next time, as it had got to be about the 25th of May, I removed my Italian queen from her hive and introduced her to another. In ten days I had eleven queen cells, and was much puzzled as to what I should do with them.

To get a very strong nucleus, I removed two frames each from each of my old hives, six in all, and put them into empty ones, looking them over carefully to avoid getting the old queens, as the books directed. But I was so bewildered by having to open so many strong hives, that I probably could not have seen them if they had half of them been queens. After having had six queen cells destroyed as fast as I inserted them, I finally discovered that I had removed the black queens from three of the six hives. I was advised to return them, but I thought as it was so much trouble to find them I would keep them out, and give them Italian queens when they became fertile; which operation took so long that I very seriously injured the said hives for the season.

For some reason or other I have never succeeded in getting my queens fertile until from ten to fifteen days, generally when they are about twelve days old, quite different from the time given by most writers on the subject.

In following the advice of an author to Italianize all old stocks before swarming, I did not get ready to make my swarms until nearly August, and, as the season was very poor here, my my first year's bee-keeping was not very profitable, that is in dollars and cents. If experience is worth anything I did well, as I spent almost the whole summer and then had to buy a hundred pounds of coffee sugar for my swarms, besides using all my surplus, and doubling them up so that I had only four swarms from eight hives.

Perhaps a few facts may be interesting in my queen raising:

One of the black queens, after being in the nucleus hive two days, was given to a friend who wished to start an observatory hive.

Some bees were taken from one of his hives and were put into his glass hive, and the queen introduced. Several days after, on going to the nucleus hive from which she was taken, I discovered that it contained two clusters of bees; one at the front of the hive and one at the back. As they had an Italian queen a few days old I could not account for it, until the friend in question came to say that his glass hive was deserted. Another person saw them come over direct to that hive.

Now who can explain this for us. This queen had been taken from a swarm that I purchased about Christmas over three miles from here; had never been out of her hive until I carried her over there in the cage, and *not a bee with her*. She had only been in the nucleus two days. Did she take the location when I picked her out with my fingers, or do queens possess the power, like cats and pigs are said to, of going home even when carried miles away in a cheese box?

Again, it is said by many, that a queen does not lead out a swarm. She must have done so in that case, as she brought all my friend's bees along, and picked out the nucleus she came from from the midst of a dozen others.

Again, at one time I had two queen cells so close together that I could not separate them, so I watched until one hatched and removed the other to a new nucleus, which queen, nearly as soon as hatched, returned with all the bees to the one I cut the cell from. This it seems *must* have been an accident, as I carried no bees from there at all. Still they were both at the extreme end of my apiary, and flew over several other similar ones in going to that one.

My experience with buckwheat was as follows:

I bought six late swarms of a neighor and carried them and set them in a buckwheat field in full bloom. They had plenty of comb and bees but no honey, and after leaving them there three weeks, while the buckwheat was alive with them, they did not improve a single pound. Several bee-keepers about here give the same result, and say they have never known buckwheat to produce any honey at all, although the bees seem very busy on it all the time it is in bloom.

One more piece of my experience and I have done for the time:

I gave $10 for a box hive in June last just as they had commenced in the boxes. I carried them home safely, and, as it was but a short distance, I thought I would keep them shut up for a day or two.

I fastened a piece of wire cloth over the entrance which was about two inches long by one-half wide, and also raised the drawers so as to let air in at the top In the afternoon I noticed they were very densely packed about the entrance; they were put in the shade, and toward night I saw honey running out of the bottom. I then opened them, and found them almost scalding hot, and the combs and honey all melted down on to them.

I inferred that bees do need ventilation, and plenty of it, another correspondent to the contrary. Of course all I had left for my $10 was strained honey and an empty hive.

A. J. ROOT.

MEDINA, OHIO.

[For the American Bee Journal.]

National Honey Plant.

MELILOT CLOVER.

(1.) Will it pay to cultivate any plant expressly for honey? If so which plant is best?
(2.) How many acres will keep 100 colonies busy while in bloom?
(3.) How many days in average seasons, and how long each day does it yield honey?
(4.) What soils are best adapted to its growth?
(5.) Is it an annual or a perennial? (*See Bee Journal, Vol. 2 Page* 165.)

No one has answered these inquiries, so I will try to do so—and in the order given.

(1.) There is one plant, at least, that it will pay to raise expressly for honey. The name of this plant is Melilot Clover (*Melilotus Leucantha.*) I have been well acquainted with the plant for several years, and am making preparations to raise several acres of it.

(2.) Ten acres will be enough to keep 100 families of bees at work while it is in blossom.

(3.) It blossoms and yields both honey and pollen through July, August, September, October and November. With us, last year, it was in bloom in December—after the first fall of snow. It is in full bloom during November, but the season is so cool in this latitude that bees can work but little upon it. In southern latitudes the plant is in blossom for a longer period. I am credibly informed that it will blossom in some of the Southern States during every month of the year. The plant is not materially affected by *drouths or frosts*. It grows very rank and shades the ground completely. This in connection with the great length of the *tap root*, is the cause of drouth not affecting it. Early frosts do not usually kill the blossoms;

but when thus destroyed it is again in full bloom in the course of a few days. Bees work upon the blossoms from morning until night, which is not the case with white clover, buckwheat, basswood or any other blossoms that I am acquainted with. In the middle of the day even bees do not suspend their labors, as the interior blossoms are so shaded and protected that the honey is not lost by evaporation.

(4.) This plant will grow on almost any soil, and without cultivation after it is once established. It will also grow in the shade of trees, hedges, or anything else; but it succeeds best on moderately dry soils, and those of a loamy, sandy, or gravelly nature. That is, it yields more *honey* on those soils.

(5.) It is a biennial plant, and hence easily destroyed, if desired. If it goes to seed, and the seed is not disturbed, it will give a new crop from year to year.

I have some seed of this plant and will send a small package of it to any of the JOURNAL readers, if two or three stamps are enclosed to pay for postage and trouble of putting up.

M. M. BALDRIDGE.

ST. CHARLES, ILLINOIS.

[For the American Bee Journal.]

Two or More Queens in a Hive.

I am sometimes led to wonder at the seeming surprise manifested by some on finding two or more queens in a hive, as if such was contrary to the nature and habits of the bees, or difficult to explain. Now while it is true to the nature of a queen to destroy her rival, yet it is also true to the nature of the workers to guard against such a destruction until they (the ruling power, if I may so speak,) shall decide what is for their interest. It is by no means an uncommon thing at swarming season, to find two or more queens in a hive—I have even taken five from a hive at one time. But why did they not destroy each other? Simply because the workers would not allow them to do so. The condition of the hive was as follows: The stock had cast a first or prime swarm, about the time the second swarm should have issued; bad weather came on, and as several queens were perfected about the same time, of course they would hatch about the same time, and as the workers desired to cast another swarm, each queen was guarded by its own cluster or guard, until fine weather should appear. Each queen and cluster forming as it were a distinct swarm. If fine weather had come soon enough, say within a day or two, the result would have been that the hive would have cast a second swarm, in which there would have been three or four queens. Or, more correctly speaking, there would have been a second, third, fourth and fifth swarm, all coming off together, and forming one of those swarms which ignorant beekeepers cannot account for, because in hiving it, they find two or more queens. The fact is, it is several swarms or clusters with their queens joined together, each cluster guarding its queen. But suppose foul weather had continued for some time. In that case, the workers would have given up the idea of swarming, the queens would have been released, and a royal battle would have been the result—only one queen surviving the deadly strife. In the case related by Mrs. Ellen S. Tupper, of Iowa, in BEE JOURNAL Vol. II, No. 12, the young queen was simply guarded by a portion of the workers loth to lose their queen; and had pleasant weather continued, one of the queens might have swarmed out, or crawled out of the hive as I have often seen them do. I cannot accept the inference drawn by Mrs. T., for it is not true to their nature that the workers should not distinguish her majesty, because she was unimpregnated. Although they do not pay that attention to an unfertilized queen that they do to a fertilized one, still every day facts prove that they readily understand that they are destined to propagate their species. Moreover if the workers had not distinguished her, the old queen certainly would, and would have killed her if she had not been guarded. I once assisted my brother to run three swarms into a hive containing empty combs; each swarm had a queen; the result was in this case, that each queen was guarded in separate parts of the hive and although all three were laying queens, still for two days, not a queen was allowed by the workers to move on the combs and lay, as not an egg was deposited in the cells. On the third day, the hive was again examined; one queen with a cluster of bees had crawled out to the outside of the hive; another queen with her guard, was lodged on the top of the comb frames, in the passage to the honey box; and the third queen was guarded in the hive, on one of the combs. Two of the queens were removed, and the next day, there were plenty of eggs in the combs. Each swarm was unwilling to yield up its queen to death. It is contrary to the nature of a queen to allow a rival queen in the hive; but it is not contrary to the nature of the workers to allow two or more queens in a hive for a time; and as the workers rule, the queens must abide their will. J. H. THOMAS.

BROOKLIN, C. W.

THE Abaza (a Circassian Tribe) have a strange way of burying their bees They put the body in a coffin of wood, which they nail on the branches of some high trees, and make a hole in the coffin by the head, that the beys, as they say, may look into heaven. Bees enter the coffin, and make honey, and cover the body with their comb. When the season comes, they open the coffin, take out the honey and sell it. Therefore much caution is necessary in buying and using the honey of the Abazas.

EVILIA EFFENDI.

WAX is bleached by re-melting it, and running it several times into thin sheets or cakes suffering it to cool, and exposing it to the influence of the air and sun. This will render wax perfectly white.

WEIGHT OF BEES.—In one pound avordupois, or sixteen ounces, there are about five thousand bees. From fifteen to twenty thousand bees constitute a strong hive, that is, from *four* to *five* pounds in weight.

[From the Bienenzeitung.]

A Well-Ventilated Hive.

[The following novel experiment will furnish matter for reflection and study to bee-keepers who believe that, in the construction of hives, perfection has not yet been attained. It may be true that, in northern climates, the plan could not be made serviceable, even temporarily for any purpose. But observation has satisfied us that in the middle States bees would work and prosper in the open air, during the summer months at least, with no better accommodation or more protection than Major de Hruschka gave to his weak second swarm. It may, therefore, be possible to turn the fact to account, particularly in the Southern States, when the idea comes to be "worked up" by some inventive genius]:

The successful issue of some of my former essays have encouraged me to make further efforts in various directions, in the hope of ultimately advancing practical bee-culture. Among several experiments not yet fully carried out, there is one of which I feel impelled to communicate an account, trusting that some inquiring apiarian, favorably situated, will thus be induced to take up the matter, repeat what I have done, and aid in rendering available any ideas that may be suggested or new facts that may be developed. This experiment will probably be the more generally interesting as it involves the question which has engaged the attention and study of bee-keepers for ages—the hive and home of the honey bee.

On the 15th of May, 1866, I put in train of execution a long cherished idea. I desired to observe the whole career and final fate of a colony of bees to which, by way of novelty and variety, no habitation had been assigned. Whilst a large second swarm was clustered in my garden, an apparatus was hastily constructed, designed to support the combs that would be built, securing moveableness at the same time, and leaving the bees entirely unconfined on every side. This was accomplished by placing nine bars, or slats, of the usual length, though somewhat thicker, on a crossbar fastened on the top of a strong staff. Strips of comb guides were cemented to the lower side of the bars; and if the combs and slats were subsequestly attached to the cross-bars by the bees, the attachments could readily be severed with a knife, and comb after comb could then be easily removed if desired.

This skeleton fixture was then gently and slowly pushed into the clustered swarm from below; and before evening the bees had so completely taken possession of their airy habitation, that I could carry it to my yard and fix it there by inserting the pole in the ground at a suitable spot where it was accessible from every side. Next morning, satisfied that the bees were disposed to remain, as they had already begun to work, a wax-cloth roof was placed over them, about ten inches above the cluster, to shield it from rain and the direct rays of the sun. Thus, exposed to the elements and to whatever might choose to assail it, it was left to its fate in the belief that, sooner or later, its destruction was inevitable. Meanwhile combs were built very rapidly, and, in proportion to their numbers, the bees were exceedingly active. On the evening of the third day I could already see the edges of the snow-white combs protruding from the cluster. In due course of time the population began to increase, and in July it had eight combs of brood, each ten inches long by eight inches broad.

I was now unavoidably absent from home several months, and though thus totally uncared for and neglected, my little colony weathered the season admirably. On my return in October I found it still vigorous and working industriously.

The original intention was that the colony should be literally sacrificed for the sake of experiment, and it was therefore allowed to remain in its assigned location till autumn was already well advanced. But on finding it covered with hoar frost several mornings in succession, and perceiving that the bees on the periphery of the mass, were regularly dropping from the effects of cold and could not be revived, I removed it to a chamber in the northern side of my house, on the 5th of November, and there again suspended it as before. The temperature of the room could be kept at from 40° to 42° without fire during the winter. The windows and shutters were kept constantly closed. I allowed them to remain there undisturbed, even when, during six days in January, the outdoor temperature was at from 66° to 68°, and the bees of my apiary in the garden were flying briskly and gathering pollen. Hitherto few bees have died, nor has the colony apparently been in want of anything.

The observations made during the progress of this experiment thus far, though unavoidably interrupted for several months, were these:

1. The combs remained beautifully white for a much longer period than they do in close hives, even when brood has been repeatedly reared in them.

2. On the other hand the bees themselves grew perceptibly greyer and darker, even in midsummer. Among the later bred bees no variation in color was observable.

3. Though their flight was unobstructed in all directions, and the small roof afforded equal protection on every side, shading it alike all round at noon, the bees departed and returned almost exclusively on the south side—the combs running in parallel ranges north and south. The south side was ever the scene of greatest activity. On the other sides the bees were for the most part inactive, and I never saw them clustered there in festoons, as though elaborating wax.

4. The colony never suffered in the least, and was never annoyed by attacks from the bees of my other thirty-six hives, nor from moths, nor from *Cetonia opaca*, the most obtrusive and destructive enemy of bees in southern Europe; nor from *Sphinx atropos*, &c. This carefully noted fact can be accounted for from the entire

absence of those attractive odors which are constantly issuing from the mouths of common hives. Whatever odor was here generated became instantly dissipated. The insects, moreover, found no inviting cracks or crevices here, into which they might instinctively seek to enter for oviposition or metamorphosis.

5. It was evident beyond all question that, during the prevalence of excessively hot weather, this colony was more comfortable and in better condition, every way, than any other in my apiary. When, in summer, the thermometer at noon was at from 90° to 100° F. in the shade, labor ceased in common hives, and the bees hung out idly in masses, only a small number of individuals remaining within to attend to the brood. But the bees of this well-ventilated colony, meanwhile, appeared to be just in their true element, working with energy, exhibiting none of that irritability which characterizes others at such times, and having no crowds of loiterers "hanging round."

6. At this colony there were neither fanners nor wagglers to be seen at any time; no bees carrying off dross or droppings, none bringing in propolis or engaged in applying that substance. Of course there was a corresponding saving of muscular energy and time to be devoted to more profitable labor.

7. Since the colony was placed in winter quarters, the bees are congregated in the passages between five or six ranges of combs. They are ranged in ray-form with singular regularity, pair by pair *dos à dos*, with their heads turned inward toward the centre of the general cluster, and remaining perfectly quiet when undisturbed. There is never any condensation of moisture perceptible, nor any manifestation of discomfort or unrest. They obviously do not, as yet, suffer from the want of water, and certainly not from the want of ventilation.

8. This skeleton hive, as I have it arranged, is peculiarly adapted for investigating obscure or doubtful points in the internal economy of bees. The entire population and every part of every comb may at any time be subjected to scrutiny, and every suitable occasion may readily be availed of to prosecute researches for the elucidation of facts or the demonstration of theory. Thus I was able to ascertain that, during the winter, while the entire mass seemed to remain in perfect repose, there was all the while a reglar slow movement in progress, by which the bees were regularly transferred from the periphery of the cluster to the centre and the converse—illustrating the

> "Constant rotation of the unwearied wheel,
> That Nature rides upon."

I shall endeavor next spring to place this colony in a swarming condition, and anticipate many pleasant hours in watching the preparations which the bees will make for that interesting event.

9. I must not omit to state how these bees deported themselves during several severe storms to which they were exposed, and we had some last summer of such violence as to threaten the existence of the little household. One of these, on its approach, struck the western side of the colony. For their protection, a great portion of the bees had clustered there in a mass of four-fold density, so that only the tips of their wings were seen protruding like scales, and thus forming an impenatrable cover to shed the rain. The remainder of the population remained in comparative security, close packed between the combs under shelter of the roof. The second storm was more violent and destructive, uprooting trees, unroofing buildings, and doing great damage in all directions. When I hastened to the rescue of my colony, I found that the rain had been blown in horizontally, and the bees so thoroughly drenched that they could be scarcely recognized. In other respects all was still in order, and next morning no traces of the occurrence were visible; not even the brood had sustained injury. The storm had been accompanied with hail, but as this happened to fall vertically the roof sufficed to ward it off.

The practicability of preserving, at least in this climate, so small a colony thus circumstanced, having thus been demonstrated, I shall repeat the experiment next spring on a larger scale, with a view to observe the deportment of the bees more minutely during the summer months. I shall place several strong colonies thus arranged in a covered area, in which they may likewise be wintered. Bees remain quiet at a temperature of 42° or 43° F.; a temperature of 47° or 48° renders them restless.

From what I have observed, I conceive that some practical advantages may be derived here from adopting this substitute for a hive. With us swarms, and even virgin swarms, are of frequent occurrence every year, and I shall seek to provide for these in this manner, with a view of disposing of them otherwise in the fall. *Wintering* bees in this manner, though entirely compatible with their own comfort, would not, I fancy, be conducive to the pecuniary interest of their owner, in consequence probably of the increased consumption of honey. Still, as the colony I experimented with was a small one, it would scarcely be fair to draw inferences from the quantity of stores it consumed, and the yield of honey was, moreover, not large in this region last summer.

F. De Hruschka.

Dolo, near Venice, Feb. 12, 1867.

[For the American Bee Journal.]

It has been said by some of our best writers on the honey bee, that in swarming season, to put up poles (in front of the stand) with a bunch of dry mullein stocks on each, the size of a swarm of bees, that young swarms would nearly always light on the stocks, and it would be much easier to hive them in this way.

Now, I think I have fully tested it this season. and I could not get one in ten to light on them. The only way that I could induce the bees to light on them was, when they commenced to light on a bush, to carry the mullein stocks close to them, and then a part would light on the stocks.

H. W. Creasy.

Light Street, July 11, 1867.

For the American Bee Journal.

A Reply to Questions Propounded by Querist.

NO. 1—STRAIGHT COMBS.

It *is not* true in practice that elevating the Langstroth hive will "*always*" cause the bees to build combs straight and within the frames, though they will build much straighter when elevated than when not. "*Always* straight" has never been and never will be true in practice in any hive, except guide-frames are used; and in my practice guide-frames as a remedy are worse than the disease. It is well remarked by Elisha Gallup, on page 219 of the BEE JOURNAL, volume ii, that if the top bars of comb-frames are bevelled to the shape of a V, or, in other words, wedge-shaped, it is all the comb-guides that Querist will want. I only speak for one when I say the reason why I discard guide-frames is that in a properly constructed hive they are worse than useless. I have no trouble with crooked combs, or bees building across the frames. There are many that understand if a Langstroth hive is elevated that the combs are in much better shape, and the bees are not so likely to build across the frames. But none with whom I have conversed seem to understand *why* it is so. What is the reason? Simply because elevating the hive has the same effect as shortening the top piece of the frames. The shorter the frame, or the narrower the hive from front to rear, the straighter the combs. It will be observed that in a Langstroth hive when the frames are level the bees generally commence at three, and frequently four different points along the top piece of the frame to build their combs. The more points they commence at the more likely to build crooked and across the frames. In a frame with a top piece only twelve inches long, bees will seldom commence at over two points, and frequently only one, to build their combs, which lessens greatly the liability to build crooked. As already remarked, elevating the hive has the same effect as shortening the top piece of the frame, as it lessens the level or horizontal portion of the hive. Any person wishing to prove it, may shorten the frames of several Langstroth hives to ten or twelve inches, and elevate the same number, and note the results.

NO. 2—DESTROYING BROOD.

I cannot see the advantage of destroying worker brood, or eggs of a native colony, to give place for an Italian progeny. An Italian queen being safely introduced into a native colony, the work is done—you virtually have an Italian stock, as the native bees in a few weeks at most will perish, and be replaced by an Italian progeny. Making haste to destroy the natives by destroying eggs and brood, is to depopulate the hive for a time and lose the labor of the natives, which if not so good is at least better than no labor. True, it is desirable to destroy native drone-brood, which I always do by shaving off the caps of the cells deep enough to disturb the larvæ—the workers will do the rest.

NO. 3—DIVIDING BEES.

A plan that works well in the hands of a novice, and does not require a search for the queen, is as follows: In the morning of a fine day, remove the stock which you wish to divide from the stand; subdue, by smoking and rapping on the hive, until the bees are filled with honey, which will be in ten or fifteen minutes. Now remove all the combs but two, shaking or winging off the bees carefully into the hive, and place the combs in a new hive in the centre, putting an empty frame on each side next to the walls of the hive, and set it on the stand where the old hive had stood. Now fill up the old hive with empty frames, putting the two cards of comb near the center, say one empty frame between them, and set on a new stand some distance from the old one, and leave it there until night, when they must be exchanged—the old hive placed on its stand and the new one on the new stand, and the work is done. The above is a simple statement of the movements to be made, presuming that a novice who does not feel disposed to search for a *queen* will not be disposed to enquire the *reason*. That he has two good stocks in the place of one is the end of his ambition.

NO. 4—RAISING QUEENS.

My experience has been that queens raised in full stocks were larger and longer, the bees building a larger and longer cell. Whether such queens are any better for breeding is a question, but that they are more majestic and better looking is a fact.

I cannot speak from experience as to whether bees can be made to raise a larger number of queens than they do, by simply removing the queen, and, therefore, will at present remain silent.

NO. 5.—BEE-PASTURAGE.

I do not believe it would pay to cultivate any plant *expressly* for honey. I consider bee-keeping profitable from the fact that bees gather from the bountiful flora of nature that which would otherwise run to waste. The profit from a crop taken from the ground which would be occupied by a plant *expressly* for honey, would be larger than the profit arising from the extra amount of honey obtained by planting expressly for that purpose—the pasturage in many sections being already more than is required for the bees kept therein. Evidently, however, in other sections it would be profitable for the bee-keeper to plant that which, while it yields a profitable crop, at the same time adds to the lack of bee-pasturage in such sections. This, in my opinion, is not properly looked after.

J. H. THOMAS.

BROOKLIN, CANADA.

To stop bees from fighting and robbing one another, break the combs of the robbers, so that the honey will run down among them, and they will go to work at home. I had two hives of bees destroyed by being robbed, and should have had another robbed if I had not received the above information.

Bee Pasturage.

The benefits springing from bee-culture are so extensive and significant that the most strenuous efforts are being made at present not only to simplify its processes, but to bring into due acceptance and regard this interessing branch of rural economy. From the remotest antiquity honey and wax have been classed among articles of traffic and consumption, for mankind had learned to appreciate the value of the bee whilst it was still swarming in the wilds of nature uncontrolled. The industry and thrift of these insects early attracted the notice of the shrewd observer, who immediately strove to turn their labor to his own advantage, and thus laid the foundation of that art which has become widely diffused in every civilized land, and has of late years been brought to a high degree of perfection. Hence, in the present advanced state of the art, whatever may conduce practically to its wider extension, or contribute to more assured success, is interesting and important to those engaged in the pursuit. In this view the bee pasturage of the various districts of country deserves special attention and investigation, as the intelligent bee-keeper may largely promote the introduction and cultivation of honey-yielding crops and trees in his neighborhood, and also aid in preventing the useless eradication or destruction of wild plants furnishing like supplies. If in the spring the movements of the bees be carefully observed during their excursions, we shall find numerous varieties of flowers and blossoms which they delight in frequenting, from many of which they derive the most abundant supplies of nectar and pollen. Among these, as among the earliest, we may name the common currant and the gooseberry. These, cultivated on a large scale, in the vicinity of towns and cities, would yield remunerating crops of fruit, and furnish rich and unfailing pasturage for the bees, as their hardiness enables them to resist the influence of snows and frosts. There is hardly a yard or a garden in which currant and gooseberry bushes might not be introduced both for ornament and use. The cultivation of hazelnuts, peaches, apricots and cherries should be everywhere encouraged—of sour cherries especially, in the blossoms of which the bees seem to revel with intense enjoyment. Nearly all our common fruit trees yield honey in abundance when in bloom; though it has been observed for some years past that the bees are injuriously effected at times in some localities, by the blossoms of the apple tree, producing torpor and death. The cause of this is believed to be found in the myriads of aphides with which the blossoms are occasionally infested. Of the blossoms of the various kinds of birch the bees are exceedingly fond, and they are very rich in honey. Maple trees of every variety yield pollen and honey in abundance, and large old trees are a perfect treasure, in this respect, in the neighborhood of an apiary. The red and the white beech, several species of the oak, and the horse-chestnut, are valuable for bees, though a prejudice prevails against the latter, in some sections, from an idea that its blossoms possess a noxious quality. Pine and fir trees yield honey, pollen, and propolis in profusion, but the honey is of inferior quality, and has been held in suspicion as the cause of foulbrood. The European laurel and yew yield honey likewise, but not so abundantly as the other evergreens; and the same may be said of the juniper. The common privet, an excellent hedge plant which might be used for screens in yards or gardens, is rich in nectar and continues long in bloom.

Winter rape, when cultivated for oil, is one of the most productive honey-yielding plants, and if the weather is favorable to the bees when a large rape field is in blossom, immense quantities of honey will be gathered and stored up by strong stocks. It is to be regretted that this crop is not sufficiently remunerative to induce extensive cultivation, as it comes into bloom after the fruit trees and previous to the lindens and white clover, thus filling up an interval when bees usually find little to gather. Mustard, both white and black, is a valuable crop for bees, and when extensively grown for seed, proves a great treat for the bees of the neighborhood. Charlock, though a noxious weed—a perfect pest to the former—has yet some redeeming qualities in the quantity of the honey it yields; and the same is true of the Canada and other thistles. We regret that this is all that can be said in their favor—insufficient, we know, to save them from universal execration.

Strawberries, raspberries, blackberries, dewberries, whortleberries—the entire catalogue of small fruits—when in bloom, are eagerly visited by the bees and yield them a long-continued feast. The honey from these plants is peculiarly fine, that of the raspberry especially being most delicious. Onions and leeks, when in bloom, are visited by bees, and are deemed medicinal by some ancient bee-keepers, who possibly had a predilection for high-flavored condiments. White clover yields honey profusely, and continues in bloom four or five weeks in ordinary seasons. Melilot is excellent though not so common. Esparcette is a highly valuable honey plant, but requires a limestone soil, and is not regarded as so good a forage crop as the common red clover, which unfortunately is of no account for bee pasturage. Luzerne grass yields considerable honey, but is not so extensively cultivated, except in the south of France. The Swedish clover, recently introduced, promises well as a forage plant in northern districts. It winters well, and yields honey as abundantly as the white clover, and of as good quality. It deserves a fair trial everywhere, and will no doubt become established where soil and climate are adapted to it. Beans, peas and vetches, rank only among the moderately productive honey plants, but may prove to be of no small importance in sections where they are regularly grown as field crops. Hemp is a favorite with bees, though seldom met with since cotton has supplanted sail duck and hanging has gone out of fashion. Flax, where grown for seed, is much frequented by bees while in bloom.

Among the wild plants and herbs are those cultivated for medicinal and domestic purposes —dandelion, savory, pennyroyal, hoarhound, mint, catnip, balm, celandine and marjorum—are all excellent, and where they abound add materially to the honey resources of the bee. Borage, goldenrod, and several varieties of the aster, yield plentiful supplies, of long continuance, late in the fall, some of the latter even surviving the earlier frosts. Many plants and flowers, besides those here cursorily enumerated, will the observant bee-keeper find frequented by the bees. He should carefully note them; encourage the introduction and cultivation of such as can be rendered useful in other respects also, and strive to prevent the destruction of such as, being regarded as weeds, are perhaps of no direct or known and positive economic value, but yet of benefit to the bee and in no wise injurious to the cultivator of the soil. When they do not occupy or encroach on cultivated ground, they should be permitted to grow.

In some seasons and sections honey-dew is of frequent occurrence, and bees eagerly collect it. For the subsistence of the bees it answers well enough, but as honey for table use it is of inferior quality and poor flavor. In dry seasons, especially in autumn when plants and flowers cease to supply nectar, wasps and hornets will attack ripening fruit, such as cherries, plums, apricots, peaches, pears and grapes, and the bees follow in their wake, appropriating the saccharine juices. Here the damage is really done by the first-named insects, and the bees simply gather up and preserve what would otherwise be lost.

☞ As the evidence of the purity of Italian bees is now being discussed in the Bee Journal, and is a topic of much interest to those bee-keepers who contemplate introducing that race in their apiaries, we have deemed it proper to copy from the Albany "*Country Gentleman*" an article giving Mr. Quinby's views of the subject—the more so, as reference has been made to him by some of our correspondents. Our own convictions, as heretofore expressed, certainly differ widely from those of Mr. Q. In accordance with our observations and experience, docility may be regarded as the exception among black bees, whereas it is the rule among Italians. We have never yet seen pure stock, where the workers had not three orange colored bands fully displayed, were not strikingly docile under ordinary treatment when the hive was opened and combs lifted out, and did not tenaciously adhere to the combs when these were shaken. Of course they may be forcibly shaken off, and aroused to anger, but not by ordinary treatment, or even by such as would hardly fail to irritate black bees:

Docility of Italian Bees.

Eds. Co. Gent.: Ever since the first importation of Italian bees by Mahan and Parsons, some seven years ago, there has been great solicitude on the part of many breeders lest some purchasers might get an impure article from his competing neighbor. Parsons suggested, in a card, that Mahan's was not the genuine. Mahan challenged a comparison, and brought specimens from Philadelphia to New York city. I was called two hundred miles to look on. Parsons refused to exhibit, and nothing was settled.

In reply to some remarks relative to the Italian bee "stinging furiously, R. C.," of Baltimore, says: "I have not met with a single instance where queens were purely impregnated and produced irritable workers. This is so invariably the case, that I regard docility of temperament as one of the best and surest tests of purity."

I wish he had given the number of cases where he knew the queens were "purely impregnated." It may be half a dozen or five hundred. The latter number would *prove* the position much stronger than the first. It would also throw a little light on the suggestion that even hybrids are sometimes docile.

At one of our State Fairs, a bee and patent-hive vender was distributing "Circulars on Bee-keeping" to bee-keepers, free. While listening to him, I was interested in the same story of the quiet disposition of the Italians, and without being aware of my presence, he indulged in some entertaining remarks: "Quinby was reliable generally, but was mistaken here; he had said that his bees were cross, and they were, of course, hybrids. He could prove to Quinby, or any one else, that this was a test of purity; for that purpose he kept them in two yards, alike in appearance but different in disposition, &c." I suggested that if "extreme docility was proof sufficient of pure Italian origin, that the bees of Mr. Flanders, which he collected in his hat, in his hand, even in his mouth, with impunity, ought to be doubly and trebly refined Italian, and yet they were common bees." If it is said they were trained or charmed, how will it be proved that those of Mr. ——— were not trained also—I mean those that were kept for exhibition to prove purity. After ascertaining that Quinby had been a listener for sometime, he endeavored to conciliate by offering to send him a pure queen for the purpose of contrasting their qualities, &c. The queen has not yet arrived, consequently I am unable to report. Another, full of commisseration for me, as he had the pure ones, would send me one for a specimen. If I found her bees more docile than any I already had, I was to pay double price, if not, he was to charge me nothing. I replied to this by another proposition: "That he might furnish the queen, and I would let him know when her bees constituted the entire family, and he, or some one that he would designate, should visit my apiary; I would point out a few hives, one of which should contain his queen and her family; he should say which it was, judging by the disposition. If he failed, it would be evidence that mine were as pure as his own, and he should be entitled to nothing; if he designated his own, he was to have pay for his queen and all trouble." I have heard nothing further from him. Can I not infer that he had not full confidence in his test? A person that never had any experience with black bees, further than with a few dozen box hives, can *know* but little of the difference of disposition of bees in different yards, and of bees in the same yard at different times. Many who have endeavored to set up this standard, never yet knew how to manage the black bees properly, do not know how easily they may be subdued—have always worked with fear and trembling.

After all my experience, I encountered last year the worst tempered apiary of black bees I ever saw—bad as any hybrids. Had I no further experience than with this yard of 90 stocks, I should not have hesitated to call the black bees the worst. As it is, I know it to be the exception, not the rule. These bees had never been handled. Bees *properly* handled, at *proper* times, will greatly improve in disposition.

I presume that a great many who have reported in favor of the Italians, would reverse their decision if they would change their practice—manipulate the combs of their black bees thirty times to their Italians once. If docility of disposition is the only test, we may be satisfied some time with the entire black bees.

ST. JOHNSVILLE, N. Y. M. QUINBY.

The Italian Bee.

This variety of *Apis mellifica* has been, for an extraordinary length of time, indigenous in Italy, and the south of Europe generally, for Virgil, and before him Aristotle, mention those rusty yellow bees in their description of the economy of the hive. But unicolorous dark bees must also have occurred constantly amongst the variegated, or rusty yellow spotted kind, as both authors also speak of black bees. In Aristotle's *De Animalibus Historiæ* we find this passage:—"Regum autem genera duo; præstantior rufus: alter niger et varius magis." And further on we find this more particular account:—"In genere apum præstantissima quæ parva, rotunda, varia: alterum genus est oblongum et vespæ (Anthrenæ) simile: tertium furem vocant: niger is, alvo lata. Quartus fuscus, omnium maximus, sine aculeo, ignavus." The verses in Virgil's Georgics, in which he declares the variegated bees to be more valuable than the black ones, are well known:—

"Alter erit maculis auro squalentibus ardens;
Nam duo sunt genera: his melior, insignis et ore,
Et rutilis clarus squamis; ille horridus alter,
Desidia, latamque trahens inglorius alvum.
Ut binæ regum facies, ita corpore plebis.
Namque aliæ turpes horrent, ceu pulvere ab alto,
Quum venit, et sicco terram spuit ore viator,
Aridus; elucent aliæ, et fulgore coruscant.
Ardentes auro et paribus lita corpora guttis.
Hæc potior suboles."

This Dryden has thus translated:—

"With ease distinguished is the regal race:
One monarch wears an honest open face:
Shaped to bee's size, and Godlike to behold,
His royal body shines with specks of gold,
And ruddy scales; for empire he designed,
Is better born, and of a nobler kind.
That other looks like nature in disgrace;
Gaunt are his sides, and sullen is his face;
And like their grisly prince appear his gloomy race.
Grim, ghastly, rugged, like a thirsty train
That long have travelled through a desert plain,
And spit from their dry chaps the gathered dust again.
The better brood, unlike the bastard crew,
Are mark'd with royal streaks of shining hue;
Glittering and ardent, though in body less."

The statements which Varro and Columella have made upon bee-keeping, show that in Italy the gold colored or variegated bees and the unicolorous blackish-brown bees occur together. Varro says:—"Ut quidam dicunt, tria genera cum sint ducum in apibus, niger, ruber, varius, ut Menecrates scribit duo, niger et varius: qui ita, melior." Columella, in his description of bees, refers to Aristotle and Virgil, and says of the queens:—"Sunt autem hi reges majons paulo et obloregi magis quam cæteræ apes, rectiorbus cruribus, sed minus amplis pinnis, pulchri coloris et nitidi, levesque ac sine pilo, sine spiculo, nisi quis forte pleniorem quasi capillum, quem in ventre gerunt, aculeum putet, quo et ipso tamen ad nocedum non utuntur."

Therefore, even amongst the Romans, the variegated and golden yellow bees were more highly valued than the unicolorous blackish-brown race. That this rusty yellow variety of the honey bee is very widely diffused in Italy, appears from the description which Spinola has given of the Piedmontese honey bee. This bee, designated by Spinola as the *apis ligustica*, agrees exactly, according to the description, with the rusty yellow bees recently introduced amongst us from Italy. Two individuals of the *apis ligustica*, captured near Bellinzona and Sesto Calende on the Lago Maggiore, which I have been enabled to compare with some Italian bees of the true race bred in Seebach, I cannot regard as a separate species, but only as a rusty yellow variety of the *apis mellifica*, the unicolorous dark form of which, according to Spinola's own statements, also occurs, though rarely, in Piedmont. The auroro colored bees mentioned by Della Rocca, and said to have been introduced into France from Holland or Flanders, may have belonged to the same Italian variety. The Egyptian honey bee, described by Latreille under the name of *apis fasciata*, may perhaps also belong to this southern rusty yellow variety of the *apis mellifica*, especially as Latreille himself admits that this Egyptian hive bee agreed exactly with a kind of honey bee taken near Genoa.—VON SIEBOLD.

[From the American Artisan.]

"Gaseous" Theory of Honey-Comb Formation.

On page 118 of the present volume of the *American Artisan* there was published a communication from an enthusiastic individual, relating to a new theory of honey-comb formation, which has at least the merit of originality, and which, if the "personal observations" of Dr. Cox, of Monroe, Wisconsin, be confirmed, must prove extremely interesting, as showing conclusively the gaseous origin of beeswax. It is unfortunate, however, that the worthy doctor aforesaid is not the author of the terms and illustrations used by your correspondent to explain his theory, as the former in clearness and perspicuity are about equal to the latter, and to make the whole "one entire and perfect chrysolite" of scientific argument and discovery, it should spring entire from the herculean efforts of a single brain.

Your correspondent starts with the confident declaration that the old or commonly accepted theory is more wonderful than the new, forgetful apparently that it is not a question of wonder at all, but of fact, demonstrated by proof. The correct ideas on this subject are the results and conclusions deduced from the careful observations of talented and experienced naturalists, who have shown that the wax is first elaborated by secretory glands, composed of a series of eight small sacs situated at the sides of the median line of the working bee, and which with the scales or spangles of wax attached thereto, may be seen by raising the lower segments of the abdomen of the bee, and that in the building of the comb each of these scales is grasped by a pincer formed at one of the joints of the leg, and conveyed to the mouth of the insect, where it is reduced by the mandibles and proboscis to a softened condition, previous to being added to the wall of the cell; and more than this, the hexagonal form of the cell is simply that naturally assumed by the cylinders of soft material subjected to equal and uniform pressure from each other, the length and proportions of the antennæ enabling the bee to build the walls in the first place in the form they would necessarily assume under such pressure, at the same time that in building the cell of the queen and those of solitary bees, where the hexagonal shape is not necessitated, they may be used in making such cells in a circular form. The wax has thus been traced from its origin in the secretory sacs to its disposition in the walls of the cells; and these facts, whether more wonderful or not, certainly appear to explain the origin and formation of the honey-comb more clearly than the supposition that the wax (which cannot exist as such if the temperature involved in its volatilization) rises in the form of "fume," one of the definitions of which, according to Webster, is an "idle conceit" or a "vain imagination," but which in this case is undoubtedly used to signify a gaseous emanation from the bee; the "fume" rising until, in some intangible manner, it is made to stop and crystallize (query, do gases ever crystallize?) around hexagonal cells—the circular cells hereinbefore mentioned being quietly ignored by the new "theory."

The advocate of this idea of the comb tells us that the said formation is a "crystallization." He should know that the honey-comb is not, in any sense, a crystalline substance, and that the crystallization of any of its constituents is only produced by artificial agencies, and then in forms varying widely from the original shape of the comb; for instance, the crystals of its principal part, *cerin*, being acicular in shape.

The originator of this new theory should also bear in mind that few subjects have received the same careful attention in all ages as those connected with the topic in hand; for from the time when the "song-famed shepherds" feasted on the honey of Hymettus, to that of the modern money-making enthusiasm of Italian queens, the study of the habits of the "busy bee," have been alike a labor of love to the student of natural history and a source of interest to the curious. And it would have been better for those interested in propounding the so-called "new discovery" to learn something of what had been known before, instead of trying to startle the world with the announcement that the comb is built up by the crystallization of a gas emanating from an "involuntary" insect. The utter crudity and fallacy of the whole idea is but co-equal with the illustrative statement that "the huge oak is all crystallized from a germ that a bird might swallow," made in total obliviousness of the fact that crystallization is wholly incompatible with organic life, and stands on the same level as the somewhat didactic request to "look at that man" "crystallized" and "complex," and whom we might be led to suppose a petrified body, only that petrifactions are composed of amorphous limestone, and the most careful dissection could hardly discover the determinate and symmetrical forms characteristic of crystallization.

A statement or proposition so absolutely at variance with established facts as this so-called theory, deserves notice only as one of the myriad instances in which an active imagination, unassisted by an acquaintance with fundamental principles, urges men into a useless expenditure of thought and study; and although even error itself, when springing from honestly conceived though clouded ideas, should be treated with kindly attention, none can justly claim to forward the real interests of science but those who found their theories or assertions upon facts tangible and capable of proof.—James M. Whitney.

[From the Iowa Homestead.]

Bee-Keeping in Germany—Bee-Keepers' Conventions—Classification of Honey.

From recent information it appears that Germany is yet far in advance, when compared with bee-keeping in the United States; even to such an extent than annually a vast amount of honey and beeswax is exported to the United States. Some of it we receive from France, and some from the West India Islands; yet the principal portion comes from Germany.

Why does Germany produce more honey than is consumed there? This is a question usually asked by almost every person reflecting on the subject; yet the answer and the reasons for it are not quite clear. Bee-keeping receives more special attention there from men engaged in any kind of business or occupation. Nearly every person that has room enough on his premises to set out a colony of bees is sure to have a colony there; and even persons residing in large cities are frequently found to be the owners of a number of colonies of bees, placed in the windows of an upper story of their houses. The system of management is very uniform. Nearly every town or vicinity has its thoroughly organized society of practical bee-keepers, which meets usually once a month, each one giving his experience in the freest manner. These town societies are again connected with District and State societies, and thus any advancement in bee-culture is communicated to nearly every bee-keeper in the nation. The hives in use are, at the present time, only perfectly movable comb hives, and the requisites of a complete hive are set forth as standard requisites, published by the national society, and distributed throughout the country at the expense of the Government. Any new book on bee-keeping is readily purchased by any bee-keeper, although four or five volumes on the subject may already be in his possession, being aware that any new hint is worth more to him than the cost of the book.

The number of colonies kept far outnumbers our apiaries. Although some very fine ones may be found in the United States, there is yet no place, to my knowledge, where as many bees are kept in one State or country as can be found in Silesia, a province of Prussia. Although it contains only about 700 square miles, there were, on the first of September last, 139,619 colonies of Italian bees, reported to be in good condition, having yielded during that year an average of thirty-nine and three-fourth pounds of honey per colony.

This vast amount of honey has its own market, as much as our corn, wheat, or any other product, and is graded or classed in like manner. Honey in the comb is graded thus: First class, bee honey—comb white, free from bee-bread, and must be nearly all capped or sealed over; second class, same as first class, except only half the cells are sealed over; third class, same as second class, with the addition of a few specks of bee-bread; fourth class, honey in comb, full of bee-bread; fifth class, honey in brown comb, with more or less bee-bread. The price of course varies with the class, and by far more than is usually the case in the United States. Honey of the second class is worth twenty per cent. less than honey of the first class, and every other class still twenty per cent. less than the preceding class. There are variations in every class, which, of course, vary the price accordingly.

Why cannot a similar system be obtained among the bee-keepers of the United States, or of each State, county, or even township separate? This is a question which forces itself upon me. It undoubtedly is cheaper to keep bees and produce the honey, than to import it across the Atlantic ocean, from Germany or any other country. We have agricultural societies, wool growers' associations, horticultural societies, sorgo associations, &c., yet the bee-keeper's associations are very limited in number.

Let some bee-keeper, no difference who, name the subject to his neighboring bee-keeper, and so on through the whole neighborhood, or township; and appoint one of the long winter evenings to meet at one of the neighbor's houses, and organize a society. Before long it may become a county association.

In like manner we proceeded in this vicinity, and now we have a flourishing association. Let any one give this subject his share of attention, the object will easily be accomplished.

E. KRETCHMER.

Honey-Yielding Flowers.

The blossoms of a vast number of weeds, plants, shrubs and trees, are visited more or less by bees, for the purpose of collecting honey or bee-bread, or both. The worthless weed and the valuable fruit tree, the lovely white clover, and the majestic tulip tree, each yields a tempting offering to the busy little collectors.

I propose to mention some of the flowers that seem to yield the most honey in this section, beginning with those that blossom first in the spring. The soft maples furnish the first blossoms that amount to much. Two or three pounds per hive of peculiarly tasting honey are often stored from them. If bees live till the last of April, when the maple puts forth its leaves and blossoms, there is very little danger of their starving that season. The cherry comes soon after the maple, and furnishes the bees abundant and profitable employment. The apple and pear follow soon after, and yield considerable honey, if the weather is pleasant enough to permit the bees to work. Nearly all that is gathered from these early blossoms is generally consumed in a short time, in rearing brood, which is done extensively at this season, and supporting the bees. Last season I had occasion to open one of my hives, two weeks after apple blossoms expanded, and I found the combs well filled with brood, but there was not more than a pound of honey in the hive. Mr. King advises bee-keepers to sow a field of turnips every year, and harvest only the largest, leaving enough in the ground to run to seed the next year, to make a pasture for the bees, between fruit blossoms and clover; but I find that they do not store much honey from turnips, the seed of which is grown extensively in this section. White clover comes in blossom about the 1st of June, and continues about six weeks. This is the main reliance for surplus honey, although the tulip and basswood being in flower at the same time, it is impossible to determine the yield of each; but a hive that casts no swarm ought to give from twenty-five to fifty pounds of surplus box honey, during the season of white clover.

We have a season between clover and buckwheat, when there are very few flowers. Mr. Quinby says that, in many places, buckwheat is the main dependance for surplus honey; but my bees have never filled a single box from it, although there has been an abundance of it grown in this neighborhood. The past season I had quite a number of boxes partly full of clover honey, which I left in the hives, thinking that they might be filled from buckwheat; but they contained rather less at the close of the buckwheat season than at the beginning. In September we have in this neighborhood an abundance of golden rod, a weed much visited by the bees, and one that yields considerable honey, but otherwise a worthless intruder in neglected pastures and fence corners. After the golden rod and wild aster, which are generally found growing together, go to seed, the labors of the bees are over for the season.

I have named only a few of the many flowers that yield their tempting sweets to the little busy bee, so wonderfully adapted by its Maker for its work; but they are the most important ones. There is one thing that I think is not generally known—that a bee always gets his food from one kind of flower; for instance, if a bee is at work on golden rod, he will not alight on wild aster, though it may be close by; and another who is at work on the asters will not leave them for any other flower.

G. F. P.

When a natural swarm has issued and becomes settled, sprinkle the cluster with sugar water, before proceeding to hive it. This renders the bees still more placable and manageable than they usually are on such occasions. It is of great service in any case, but is especially useful when the swarm has clustered in some place or spot where it is not readily accessible. If, after sprinkling, the bees can be reached with a small tin dipper, they may be slowly, yet effectually transferred to a hive or hiving basket, taking a dipperful at a time. When the queen has thus been brought away, the rest of the swarm will speedily follow.

[For the American Bee Journal.]

Purity of Italian Queens.

Mr. Grimm, on page 228, June number of the Bee Journal, doubts that there are Italian queens which produce young queen invariably duplicates of themselves. He says: "I cannot conceive why Mr. Kleine wrote the interesting letter referred to, nor why Mrs. Tupper defines the purity of Italian queens as she does, when both of them should have known that they had no such queens themselves, and could not procure such even in Italy." It seems strange to me that Mr. Grimm should doubt, in this way, a positive assertion of Mr. Kleine; nor can I conceive what has authorized him to judge of any one's queens except his own. If he has as he says, reared "over six hundred queens" in a short time, from *three* mothers, in a section of country abounding in black bees, it will not surprise any one who has been engaged in the business that he should produce "queens that vary greatly in color;" nor is it fair that the queens he reared, under such circumstances, should be taken as specimens and compared with those reared by Mr. Kleine, Mr. Langstroth, and others, who have spent thrice as many years in rearing half that number from the choicest stock, destroying every queen that did not produce good progeny.

It is quite as unfair to express an opinion of my queens, because he once saw the outside of my hives on a damp autumn day, when not a young bee was in flight, and he did not open a hive or see a queen. He entirely misinterprets the remark made by me to him at Burlington, which was to this effect: "That those who purchased queens from some dealers in them were obliged to be satisfied if they obtained a majority of young queens from them like the parent." He does not repeat what I distinctly asserted, and what is now, from this season's experience, even more firmly my belief, that if we would have and keep the Italian bee pure, we must rear from no queens that do not reproduce themselves. You may call their color brown, or yellow, or leather color, or what you please, but, with slight variations of shade from dark to light, an Italian queen purely impregneted will produce young queens *like herself.* If she does not, however valuable she may be for the purpose of building up a colony, or how energetic that colony may be, she should not be used to *to rear other queens from.*

Mr. Grimm's method of multiplying stocks rapidly, and preserving all queens, whatever their marking, even to the number of six hundred from three in as many years, may be the most profitable, since no one disputes that for honey-storing purposes, or rapidity of increase, bees not perfectly pure are quite as valuable as the best. We only protest against his comparing queens reared in this manner with those of others who proceed in quite a different way. In this matter, I would express my great obligations to Richard Colvin, Esq., of Baltimore. After several disappointments in queens, I sent to him four years ago and received from him two Italian queens, from an importation of his own. They were introduced into good colonies late in the fall, and early the succeeding spring I commenced rearing from them. Out of forty reared from one of them, every one was *like herself* in coloring, (call that color what you please.) From the other several were differently marked, not like black bees, but with distinct yellow rings, and, though large and handsome, totally unlike the parent. (I can hardly describe their appearance, but all who rear queens will understand me.) I wrote to Mr. Colvin and "reported progress." He replied immediately, advising me to "rear no more from the latter queen, and to destroy all I had reared, for nothing from such a queen would be pure, except her drones." He soon replaced her by another, which, like the first, did always duplicate herself.

I have since then purchased eight queens of different importations, and but one of them all has, like Mr. Colvin's, given me invariably well marked queens. Still I have kept his advice in view, and never reared from any one (after testing her) that gave me any poorly marked queens. I have queens in the third generation from all that produced pure, and find that, when they are fertilized by Italian drones, their queen progeny is just the same as were the original; and that the workers from them not only are uniformly marked, but gentle, not disposed to sting, and that they cling with tenacity to a comb when lifted out, so that it is almost impossible to dislodge them. Some say that this peculiarity is a better test than any markings. In my experience, when they are properly marked, they always possess this peculiarity. I have never seen pure Italian bees without it.

At first, as I expected, a very large proportion of my young queens met common drones. These I kept for honey-storing purposes exclusively, replacing them as fast as possible, and allowing no natural swarming when it could be avoided, that I might keep track of every queen. I found, too, that many of my young queens produced much finer drones than their mothers. My proportion of queens properly fertilized, has been fast increasing; and last fall, out of forty-six reared in October, all but two met Italian drones. This spring, instead of being obliged to rear from three queens, I have had over thirty that did not fail to give me duplicates of themselves; and, though I do not claim to be free from much hybrid stock, nor expect to rear "six hundred pure queens" in —— years, I do know that by taking sufficient pains any one may have Italian queens that will produce workers uniformly marked with three rings, gentle and "tenacious" in disposition, and that will produce queens always like themselves in coloring. As to drones, though there is undoubtedly more difference in their coloring than in that of workers and queens, I find that, by selecting queens that produce the best colored drones to rear from, there may be a great improvement in this respect also. ELLEN S. TUPPER.

BRIGHTON, IOWA, July 5, 1867.

[Translated for the Bee Journal.

Do Bees Know Their Owner ?

Every one who had the good fortune to spend the years of his boyhood and youth in intimate communion with external nature, whether bred among quiet rural scenes, or visiting them only occasionally to escape from the dust and noise of city life, recalls with delight the hum of the busy bee and the home-like snugness of the old fashioned straw hive. Our remembrance of the honey-gathering insect is connected with sweet passages of pastoral poetry, with the shrewd admonitions of "proverbial philosophy," and the wise teachings of the "Poor Richards" of an earlier day. We summon to the mind's eye the stalwart form of the aged bee-keeper, arrayed in tasselled cap, stout gray blouse, black breeches, blue hose and buckskin slippers, seated in a snug shady corner of his garden; and, while regarding him with reverence and awe as the captain bold of hosts multitudinous and fierce, cast a timid glance at his picturesque apiary—the armory of the "small infantry" of which he is comptroller and commander-in-chief, and yield him the tribute of our unfeigned admiration.

"And do these bees know their master?" was the inquiry which then invariably arose, accompanied by the spontaneous response—"Undoubtedly! The bees cannot fail to know their keeper. Are they not known to be so attached and true, that when their owner dies they too pine away and perish?"

These views and notions are probably those which most men, not having occasion to revise them subsequently and ascertain the truth, carry with them from boyhood to maturer years. Spring flowers in garden and meadow, the sweet odor of honey, bright sunshine, summer showers, the hum of the hive, honey-cakes and mead, a dim conception of the mysteries of the household and of the wise orderings of nature; but, above all, the memory of swollen noses, closed eyes, and rubicund ears—in short, a commingling of undefined admiration and secret apprehension or dread; such, approximately at least, are the views and feelings which loom up before the fancy or cower in the heart of the layman when the talk is of bees. And even in the bee-garden, in the very presence of the "toiling multitude," the remark is frequently made—"Is it not so, the bees know their owner?"

I would, therefore, in advance, beg pardon of all sentimental folks, for now undertaking to attack and demolish this venerable, though poetic conceit—denying that the bees cherish any such attachments or possess such regard; and responding to the remark with a blunt, bluff, prosaic no! Nor need I say that this response is intended for the layman only and the novice, for the experienced and observant bee-keeper would not put the question, having long since settled the point to his own satisfaction.

In arranging my reply, I shall make short work with the queen and the drones—eliminating and excluding them altogether from the discussion.

As regards the drones, they are either lounging wistfully around the honey-pots at home, or roaming abroad for exercise, or in the pursuit of enjoyment at the forfeit of life. They confessedly have no fondness for the bee-keeper, nor the bee-keeper for them.

The queen, on her part, dwells in the interior of the hive, on household cares intent. If ever she leaves home, it is to accompany a swarm—thus mischievously bent on deserting her owner; or, impelled by blind passion, she rushes forth in quest of a mate—on which important occasion, she has, of course, no consideration whatever for the solicitous attention of her master.

Two of the constituents of the hive thus summarily disposed of, as not coming in any respect within the province of the "main question," the workers alone remain to have their case investigated.

Now the worker is a remarkably self-occupied creature, intent on specific duties, and devoted when from home to certain definite labors. She works with an assiduous perseverance and fatalistic contempt of danger and death, as though sworn to the unflagging discharge of her obligations even unto the bitter end. She waits upon the queen, she renders watch and ward, she measures the minutest angles, and builds most wondrous polygons. She constructs admirable queen cradles for incipient royalty, concocts the needed pap and pabulum for the infant brood, ventilates the chamber, sweeps the floor, carries out the dross, and buries the dead. These are her domestic labors—her supervision of the department of the interior. But she has charge likewise of the portfolio of foreign relations. Behold her on some sunny morn, making her appearance at the door of her domicile, brushing the dust from her eyes, drawing on her gloves, and dashing off boldly in mid air, winging her zig-zag and circumforaneous flight to the yellow rape-field, the sweet smelling linden grove, or the distant heathery hills. Returning thence on rapid wing, in a "bee-line," she comes laden with distended honey-bag and well-filled breadbasket, these to be discharged into the common hoard, and garnered in the cellular repositories prepared with such artistic skill for their reception. And this continues, with scarce an intermission, from early dawn to dusky eve; though this incessant activity in most instances, leads to a premature death. Her wings become ragged and worn; her muscles relax; swallows, hornets and spiders way-lay and entrap her; sudden storms and gusts of rain dash her to the earth; and the deceitful mirror of brook and pond tempts her to a watery grave. Hence the bee, as Dzierzon has proved, in spring and summer, hardly gets to be six weeks old. To the bee in winter, there can be no reference here, as she, withdrawn from all out-door labor, hybernates, or rather simply vegetates in quiet retirement and domestic repose. Where then would the active, untiring bee find time to bestow special regard to and nurse recognition and attachment for her owner, though he were a bee-keeper as respectable and venerable as the ancient Aristæus himself.

Undoubtedly those workers, whose particular charge it is for the time to mount guard at the entrance of the hive, will not fail to take special notice of Mr. Bee-keeper whenever he happens to visit the apiary. But if we may be permitted to regard matters from the standpoint of an insect, and to assume that it, like ourselves, takes its own size as the standard of measure, the respectable gentleman just referred to might appear to the eyes of the bee somewhat like a large, dark, menacing giant, with great fiery eyeballs, and enveloped in a blue mist bedimming the sun. Not a very engaging and lovable object, surely.

On the whole, too, I would ask every honest bee-keeper to declare on his conscience, whether, on such occasions, when the bee approached him with pressing closeness, for recognition, he ever observed on the part of the said bee any evidence of loving attachment or respectful regard, or any demonstration of a desire to cultivate a friendly acquaintance or renew pleasant sociable intercourse, such as the question propounded seems fairly to imply? I suspect he will not answer aye—nor will he utterly repudiate the notion of the blue mist, as an illusion of the imagination.

"Good!" exclaims our inquiring bee friend, "Good! but our excellent bee master surely will not always be standing there as a mere looker-on. He will, at least in the spring, raise up his hives and peep within; or, if he has movable comb hives, will now and then take them apart for examination; will divide stock; will raise queens, and will make artificial colonies—and thus necessarily form and cultivate a closer acquaintance with his bees." All right, my worthy friend, I reply. But, alas, I must confess that in us bee-keepers, at those moments when we undertake actually to handle bees, the coolness and courage which we are wont to make our pride and boast, are apt to ooze out wonderfully, unless we equip ourselves in sting-proof armour. We are quite ready at such times to array ourselves in deep disguise, and then stalk about boldly in impenetrable incognito. With hands encased in thickest woolen mittens, with head ensconced in close-meshed bee-cap, and with loose linen blouse enveloping the body, we move in masquerade, so that neither friend nor brother could identify us—much less our favorite bees, friendly and familiar as they might be disposed to be. Even the boldest operator among us will scarcely disdain, on such occasions, to blow a whiff of tobacco smoke into the nose and eyes of the prying and obtrusive bees, who come quizzically whirring around, striving to peep under his visor, to ascertain whether it is indeed the smiling face of their well-known and much-loved owner that is so well guarded and so sedulously kept from view. Incredible numbers of cigars are annually smoked, in self-defence, by "practical apiarians," while making artificial colonies; and meerschaums and clay pipes, by the groce, are in demand during the season when first and second swarms are to be hived. And since, in the case of tobacco, demand and supply have of late years not kept due pace with each other—the weed having risen in price, while cash has grown scarcer, and the worshipful operator, in his zeal for his own safety, not being always careful to procure the best quality of the needful commodity, it may well be doubted whether the bees feel specially flattered by the flavor of the article used; and it can scarcely be imagined that their sympathies will thereby be enlisted or their favorable regards secured, while the *interesting* work is going on.

But suppose we could honestly and conscientiously concede to the unquestionably ingenious bee, a degree of intelligence enabling her to comprehend, in all its amplitude and extent, the true relation subsisting between herself and her owner, would she not diligently seek to protect herself and her stores from the skillful hands of the accomplished bee-master? What is there in all he does, on the more important occasions, to entitle him to the devoted attachment of his hard-working charge, though he have the vanity to dignify himself with the endearing appellation of bee-father? He looks very complacently all summer on the toil of his favorite, and rejoices to witness the ever-growing accumulation of stores. Then, in autumn, he sneaks off to a drug-shop and buys an ounce of villainous brimstone, and with its suffocating fumes dooms the hapless inmates of his hives to swift destruction. Next, pressing, and seething, and skimming, he separates wax from honey, and hastening to market converts both into cash—exulting over his gains as though the money were the product of his own veritable industry; and there his kindness ends. Now what could a conscious intelligent insect perceive in all this to inspire attachment to her owner, or cause her to rejoice in his presence at the apiary? Are not we bee-keepers the most arrant honey-thieves on earth; and would not the bees justly hail us by that title, could they speak?

Finally, we must not neglect to do justice to the vulgar notion already referred to, which ascribes inconsolable sorrow to the bees when their owner dies, alleging that they too then pine away and perish from sheer grief at the loss of their venerated friend. Undoubtedly there is a substratum of truth underlying this ancient and world-wide belief, and it would be interesting to gather up and analyze some authentic accounts of such occurrences. We should then, in all likelihood, reach this surprising result, that the cases of mortality—all and singular—were limited to the spring of the year; and that in the obituary of the defunct bee-keepers, their biographer had omitted to mention the fact that they had, each and all, undertaken to winter weak stocks only; had become alarmed by dread of starvation as spring approached, and went out to feed their bees, thinly clad, in a raw easterly storm. Taking cold from such imprudent exposure, pneumonia followed, and death supervened. And now, the provident apiarians failing to re-appear with their feeding troughs, the bees speedily succumbed; sickness and famine swept them off by the score, and family after family went the way of their late owners.

> "Men have died, and worms have eaten them,
> But not from love."

And thus bees have perished, but not from grief for their departed owners.

Hence, according to all this, the well-meant and flatteringly unctious question with which this erudite discussion was opened, must finally be decided in the negative. "The *nays* have it." All the credit which we bee-keepers have so long enjoyed for living on familiar terms with our bees—though these have neither the disposition, nor any valid reason, to cherish attachment for our persons—proves in the end to be founded on sheer knack in management and practical skill in manipulation, together with a sedate and dignified demeanor somewhat imposing from its manner. For truth's sake we are bound to make this acknowledgment, though the wide-spread notion of the fondness of the bees for their master, should thereby receive its *coup-de-grace*.

The true bee-master, be it known, is the genuine Platonic "philosopher on his throne." He declares, with the shrewdest politician of the present day, "the bees must bear in mind that they are the subjects of an absolute government"; and exclaims with Sarastro in the Magic Flute:

> "Though I cannot constrain thee to love me,
> Yet still will I ne'er set thee free."

MUNICH. W. BUSCH.

[For the American Bee Journal.]

On the 10th and 12th of July, 1866, I put a swarm of black bees in each of two box hives. One of them filled its hive full of comb; the other only two-thirds. During February and March following they both perished. I saved the combs entire in each, and fumigated them with sulphur twice during the spring. On the 20th and 21st of June I put in each hive a swarm of black bees, which were well pleased with their new furnished home. On the 28th of June, I received twenty-four pounds of box honey from the eldest, and on the 5th of July two boxes more of same amount—making forty-eight pounds of honey. The main hive is full of comb filled with honey, and from all appearance I shall have twenty-four pounds more by the 20th of the month—total, seventy-two pounds.

The other hive has done equally well, in proportion to the time and the amount of comb when commencing.

Does this case involve anything new that might be improved upon? Could this year's swarms be driven out late in the fall into breeding hives, and the comb reserved for next season's use? I would like to hear the difficulties in the way of the above suggestions explained by some of the numerous readers of the JOURNAL. By the way, the readers of the BEE JOURNAL are among the most intellectual and moral men of our time, as the culture of the honey bee involves, next to man himself, the greatest wonders of our kind Heavenly Father.

J. L. PEARCE.

MINERAL RIDGE, OHIO.

NORTH READING, (Mass.), July 20.

We have had very poor seasons here for bees for the last two years. Last year there was a very full bloom of the fruit trees; but the weather was unfavorable, and there being only a small amount of clover, new swarms scarcely got enough to live on. I had a number of swarms that did not build their combs more than half way down. These I fed enough to carry them through the winter. But few bees died in this vicinity, except those that were short of honey.

This spring has been cold and wet. The fruit trees did not bloom scarcely any. There was a large quantity of white clover, and the bees have gathered considerable surplus honey. My stocks that only partly filled their hives and had to be fed, have built their combs down, and all of them swarmed, some of them twice and some of them three times.

I have noticed, for several years, that swarms that come out late, especially second or third swarms, if fed enough to carry them through the winter, build their combs down the next season, and generally do much better than old stocks.

I think this is rather an unfavorable locality for keeping bees on account of the sudden changes of the weather in the honey season—which generally last only two or three weeks—the bees seldom gathering any surplus, except when white clover is in blossom.

My bees are Italian, but not pure. There are so many black bees in this neighborhood, that it is impossible to keep the Italians pure. I use Clarke's hive generally. Bees winter here much better in the Clarke, or in the old fashioned hive, then they do in moveable-comb hives. The movable combs are indispensable for rearing queens; but, for general use, I prefer the Clarke.

I like the AMERICAN BEE JOURNAL very much, and hope it will meet with such success as to make it a permanent institution.

JOSEPH D. GOWING.

THE AMERICAN BEE JOURNAL.

WASHINGTON, JULY, 1867.

☞ The American Bee Journal is now published monthly, in the City of Washington, (D. C.,) at $2 per annum. All communications should be addressed to the Editor, at that place.

To Subscribers in Canada.

Mr. John H. Thomas, of Brooklin, Canada West, will act as the authorized agent of the American Bee Journal in Canada and the British provinces. Remittances to him on our account, will be duly acknowledged.

A New Notion.

The French Academy of Sciences has recently published an article, prepared by Dr. Landois, of Munster, on the "*Law of Sexual Development*," in which an attempt is made to overthrow the Dzierzon theory on that subject in the case of bees. He says: "It is known that the eggs from which workers proceed are laid in cells differing from those in which eggs producing drones are laid; and that the food or jelly with which the bees supply the larvæ is prepared distinctly for each sex. Hence the query readily arose, may not drones be produced from eggs laid in worker cells, if such eggs be transferred to drone cells, and care be taken that the nursing bees shall supply the disclosed larvæ with drone-jelly exclusively? and, conversely, may not workers be produced from drone eggs, under similar circumstances and like treatment?"

Dr. Landois says that he actually made the experiment repeatedy, though at first without success, as the bees defeated his arrangements; but finally he succeeeded in deceiving them, and then the result was in accordance with his anticipations. The attempt, he alleges, will invariably fail, if the transferred eggs be placed in a comb the cells of which contain none laid therein by the queen. His process was to cut out with the point of a knife, a portion of the cell bottom to which the egg is attached by the queen in oviposition; and then, lifting out the small plate with the egg thereon, insert it in the cell designed to receive it. He claims to have produced workers from drone eggs by this process, and drones from worker eggs, and thus demonstrated that the production of workers is not the result of impregnation, and that sexual development is dependent solely and exclusively on nutriment.

All this, we have no doubt will prove to be a mistake. It will be found that Dr. Landois, instead of deceiving the bees, was himself deceived by them. The fact, well ascertained, that there is no difference whatever in the jelly fed to drone or worker larvæ, is fatal to his doctrine, if no other objections could be urged against it.

Errata.

In Prof. Varro's communication on the "Purity of Italian Queens," in our last number, there is an omission after the fifth line from the bottom of the second column, page 19, which should be supplied. The passage ought to read —"he bought three queens from Mr. Langstroth, one of which *produced an almost black Italian queen, which* he tested for breeding," &c.

In the description of Mr. Allen's hive, in the same number, the word *racks* is misprinted *sacks* in the 39th line of the first column, page 18.

Among the mass of amusing and instructive information with which the volumes of Kirby and Spence abound, is the following: Bees in excursions do not confine themselves to the spot immediately contiguous to their dwellings, but, when led by the scent of honey, will go a mile from it, or considerably more; yet from this distance they will discover honey with as much certainty as if it was in their sight. A young bee, as soon as it can use its wings, and has learned by hovering in front of it to know the position of its hive, seems perfectly aware, without any previous instruction, what are to be its duties and employments for the rest of its life. It appears to know that it is born for society, and not for selfish pursuits, and therefore it invariably devotes itself to the benefit of the community to which it belongs. Walking on the combs it seeks for the door of the hive that it may sally forth and be useful. Full of life and activity it then takes its first flight, and, unconducted but by its instincts, visits like the rest the subjects of Flora, absorbs their nectar, covers itself with their ambrosial dust, and returns unembarrassed to its hive.

☞ It has been a common practice for many years, among German bee-keepers, instead of attempting to winter weak colonies, to drive out the bees from all such in the fall, and unite them with their strong stocks, preserving the hives with the combs they contain for spring use, and placing their early swarms in them. New, clean combs are too valuable to be melted down, unless the present market price of wax were at least quadrupled. When the hives from which the bees were expelled contain honey in the combs, they are occasionally used in the winter or spring to save famishing colonies. Such hives are called "*honicher*" by the Germans—a term for which we have no corresponding English word.—[Ed.

INTERESTING CORRESPONDENCE.

BRANDYWINE HUNDRED, (DEL.,) June 15.

Please continue my bee papers, the subscription to which ended with the June number. I like the BEE JOURNAL very much. I have a few hives of bees, and the paper makes them more interesting. I have received the papers regularly. GEORGE W. HARRIET.

LEWISBURG, (W. VA..) June 25.

Being so well pleased with the second volume of your BEE JOURNAL, I cannot do without it; so enclosed find two dollars subscription to the third volume, with many wishes for the success of your enterprise.

T. L. SYDENSTRICKER.

PARMA, (N. Y.,) June 23.

Please send me the AMERICAN BEE JOURNAL another year. I cannot get along without your valuable paper. NELSON TENNY.

PLEASANT HILL, (KY.,) July 4.

I very much hope the AMERICAN BEE JOURNAL may receive patronage enough to sustain it in full vigor and health, as I look upon it as a very valuable publication.

R. B. DUNLAVY.

NEW PARIS, (OHIO,) July 5.

I have been reading the AMERICAN BEE JOURNAL for some time with a great deal of interest, and I think with some profit. I am very anxious to have the publication of it continued.

D. L. KIRKPATRICK.

WEST MIDDLEBURG, (OHIO,) July 8.

I have received the AMERICAN BEE JOURNAL, and found it to be the paper that every man who keeps a colony of bees ought to have.

STOKES HELLING.

HOOSICK CORNERS, (N. Y.,) July 10.

I am much pleased with your BEE JOURNAL, and intend to preserve it bound.

DOTY BRIMMER.

CANFIELD, (OHIO,) July 12.

I hope you will be able to continue to publish the BEE JOURNAL for many years. I find in it many things interesting, and valuable instructions to bee-keepers. I have tried one hint in the cottage management of bees that succeeds very well—namely, placing the swarm on the old stand, and setting the old hive in a new place. I have tried it in about ten cases, and have not been troubled with a second swarm, though two of the new swarms have each swarmed—one in twenty-one days and the other in eighteen days. They are Italians, and I put them in hives containing combs saved from stocks that died in the winter. Both of them stored honey in boxes before swarming; and the old hives that were moved are working in boxes now. My first Italian swarm came June 5. The first common swarm I heard of was about eighteen days later. I have Italianized some hives by giving them a sealed queen cell this season. J. WINFIELD.

EAST SAGINAW, (MICH.,) July 15.

I hope bee-keepers will take interest enough in the JOURNAL to keep it going. There may be some who are too old to learn, but old men pass away and the young must learn. So, success to the BEE JOURNAL.

L. C. WHITING.

RIPON, (WIS.,) July 10.

I wish I could see the BEE JOURNAL well supported by bee-keepers. It is devoted to our work, and the support must come from us. If it go to the wall, see that it is not our fault.

My bees are very much behind in their swarming—out of eighty stocks only four have cast swarms. In the boxes they are doing well. Clover is in full bloom, and has been for over a month, Bass wood will not be in bloom for a week yet. I am testing the work of the Italians this summer, and will compare it with that of the black stocks in the same condition, and give you the result at the close of the season.

R. DART.

MALVERN, (OHIO,) July 18.

Bees have been doing well with us this season, but there will be more swarms, I fear, than honey to feed them, among those who have let their colonies swarm at will.

GEORGE HARDESTY.

For the American Bee Journal.

Transferring.

My first effort in this line was ludicrous enough. I had Quinby's and Kidder's books, and the collection of ropes, and sheets, and boxes, hives, &c., was enough to frighten the bees into good behavior if nothing more. My plan now is to smoke the swarm to be transferred pretty thoroughly. Then turn the hive over, pry off one side, and, with a long knife, cut out the first comb; carefully brush the bees off into the hive from which you are taking the combs. They will continue to move back among the combs as these are removed. Lay your brood combs on a folded cloth, and cut them to fit your frames. Fasten them therein, as directed by Quinby, with sticks, and put the frames into the new hive. You can now brush the bees into the new hive as you remove the combs, and when the combs are all removed, your bees are removed also, and you have no further trouble. It is very rarely the case that you have good straight combs from the old hive to fill all the frames in the new one; so I always use a division board, by which I confine the bees to the space which they really occupy. As they increase in numbers the division board can be moved along, and new frames inserted. By the way, I think too much importance cannot be placed upon the use of the division board. It is invaluable for the use of stocks. Spring is the best time to transfer. If carefully done you need no protection for hands or face.

INTRODUCING QUEENS.

I have changed the Italian queen I have three times this season—done it by the method of Mr. Alley, by smoking. I had good success each time, and should not hesitate to introduce any queen, however costly, in this way.

ITALIANIZING.

Most writers say, remove the old queen six to twelve hours before inserting a sealed queen cell. I have uniformly inserted the queen cell at the same time that I removed the queen, and have not had a cell destroyed.

STRAIGHT COMBS.

I have no infallible rule. But bees build new combs in a parallel line with adjoining combs. An empty frame placed between two straight ones, would inevitably be filled with straight comb, if the bees did not make the full combs adjoining the empty frame thicker, especially near the top; or they will make one much thicker than the other, and thus cause the new comb to be made on one side of the empty frame instead of the centre. I have remedied this in a great measure in my hives by taking out the full frames, and, after brushing off the bees, cutting the honey cells off with a long knife to even thickness with the top of the frame, *i. e..* $\frac{7}{8}$ of an inch. By cutting over a pail or pan you can save much very nice honey; and before the bees can make the combs thicker again, the new frame will be filled with perfectly straight brood comb. I do not advise any one to do so. It is only this season that I have done this. Perhaps late in the season it might not answer as well. I have seen no bad results as yet, but, on the contrary, I think I can show as many perfect combs to the hive as most beekeepers.

DRONE COMB.

Can any one tell me the reason of my bees this year building so much drone comb? In nearly all of my hives, whether they have laying queens or not, the bees seem determined to build drone comb. If they begin at the top with worker comb they will change to drone comb at a distance of from two to four inches down; or will build worker comb at one end of the frame and drone comb at the other. I have practiced cutting the drone comb out, but I think this retards comb building very materially. Has any one a reason, or a better remedy?

J. TOMLINSON.

NEWBURG, (WIS.,) July 17, 1867.

The Bee-Eater.

MEROPS APIASTER.

There are many species of the genus *Merops*, all of which are distinguished by their brilliant plumage, and take their prey, consisting of bees, wasps, gnats, &c., on the wing, like the swallow, and what seems remarkable, without being stung by them. The one we are about to describe is among the most elegant of European birds, and next to the Robin and Kingbird may be considered as the most brilliant in point of color. It is a native of the warmer parts of Europe, particularly among the islands of the Grecian Archipelago, and of many parts of both Asia and Africa; but in the north of Europe it is rarely seen. In shape this bird resembles the halcyon tribe, and is about the size of a blackbird. The bill is slightly curved, sharp-pointed, rather long, and black; the irides bright red; the crown of the head and the upper parts of the neck are of an orange-chestnut color; the throat yellow, the scapulars, lower part of the back, and wing-coverts pale yellow, more or less shaded with an admixture of red and green. The smaller quill feathers are rufous-chestnut tipped with green; the larger sea-green with dusky tips; the rump and tail are sea-green, the latter about three inches long, the two middle feathers projecting, in a pointed form, to some distance beyond the rest. The sides of the head, above the eyes, and the whole under parts are sea-green; from the corners of the bill, on each side of the head, a black streak passes across the eyes, curving downwards, and nearly meeting the tips of a black crescent placed across the snout, and separating the yellow of that part from the sea-green of the under parts. The legs are short, and of a reddish brown color. It builds in deep holes on the banks of rivers, forming a nest of moss, and laying from five to seven white eggs.

The Indian Bee-eater (*Merops viridis*) is about half the size of the European species, but the middle tail-feathers are considerably longer. On the upper part of the breast is a crescent-shaped transverse mark, with the horns pointing upwards; the back and lesser covert-feathers of the wings are of a parrot-green color; the rump or coverts of the tail of a bluish-green; the breast and belly of a light green, and the tail is green. The greater quills of the wings are dusky at their tips; the centre quills are of an orange color, bordered with green and marked with black spots, the extreme tips being orange; the first row of coverts above the quills is orange in the centre and green on the edges. The bill is long and sharp-pointed, having a downward incurvation; the claws are pretty strong, and the legs and feet of a dusky brown color. This species is a native of Bengal, parts of Madagascar, &c.

For the American Bee Journal.

MR. EDITOR: I usually double second swarms, saving a few bees with one of the queens, to make good losses. I find that bees from caps carried into the cellar will join these small swarms peaceably, and remain when carried out next day. This would be a safe way, for a novice, to furnish an Italian queen with bees.

Swarms losing their queen will run into other swarms of two or three days standing; but on putting bees of a second swarm into a second swarm of the day previous, they were stung. Swarms of the same day mixing show some fight. What makes the difference? Must they come showing their conscious queenlessness to insure a kind reception?

I have ninety old stands and one hundred new ones.

F. H. MINER.

LEMONT, ILLINOIS.

AMERICAN BEE JOURNAL.

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[Translated for the American Bee Journal.]

Contributions to Bee Culture in Cottage Hives.

No. 1.

While thus submitting the first of a brief series of articles on this topic, I would candidlly admonish my readers that I have no expectation of being able to furnish them with anything specially novel or striking. At the same time I would request them to acquit me of the vanity of conceiving that I am one of the shrewdest among bee-keepers, and thus authorized to assume the position of an instructer. On the contrary, I verily believe there are many practical bee keepers much shrewder, more competent, and of larger experience than myself. I am content, in the hope of being useful, to occupy an humbler rank. My desire is rather, by these contributions, to induce others to communicate, for our common benefit, some detailed statement of their views, experiences, processes, and manipulations. For I apprehend that in these periodicals, bee-culture as it has been, is, and must long continue to be practiced with common hives among the common people, is equally entitled to investigation and discussion, as the new method aided by movable comb hives and the Dzierzon theory. Even admitting that those who have for many years used the common straw or box hive, have long since become experts in practice, and have attained to such advances in knowledge and experience, that nothing remains for them to learn from one another—which is hardly a supposable case—there are still among the readers of these papers, a large number of new beginners, and of practitioners of limited experience, to whom it will be decidedly advantageous to have many matters described and discussed with minuteness and simplicity, which older apiarians may regard as thoroughly settled and universally known. Though the old practice of dealing in ***secrets*** and ***mysteries*** has largely gone out of vogue in bee-culture, as in other branches of human handicraft, there are yet here and there some ancient bee-masters who withhold what they know, and cannot bring themselves to find their richest recompense in imparting freely to others the acquisitions of their experience. Hence beginners are ofttimes nonplussed in their efforts and discouraged. They have heard, as it were, the tinkling of the bell, but cannot ascertain distinctly whence the sounds proceed or what precisely they betoken. The result is not unfrequently perhaps, that because of some slight mistake or inadvertence, the novice encounters disappointment and failure, in an operation which properly conducted would have been a gratifying success, cheering his heart with delight and encouragement.

The chief reason perhaps, why so few of the bee-keepers of the country—though there are among them many successful bee-masters—write for the BEE JOURNALS, is the fact, that with rare exceptions, their education was limited to what *was* taught in our common schools when they were young, and they are thus unpracticed in the " art and mystery" of literary composition Even some of the more advanced among them, well qualified to furnish instructive communications, dread, if they should chance to express themselves awkwardly, being laughed at and ridiculed as belonging to that class of hopeful aspirants who are cursed with the scribbling itch without being blessed with the faculty of scratching themselves with a good grace.

But, worthy co-laborers in bee keeping, let us not be deterred by such apprehensions from contributing our mite for the advancement of bee-culture. Rather let us compare those who would look down so contemptously on our humble efforts, to the butterfly in the fable, which, arrayed in gay and gaudy colors, as it fluttered among the flowers regarded with disdain the busy inconspicuous bee that was so assiduously appropriating the nectar. Yet the bee could display in her home, works surpassing the architect's skill and treasures challenging the miser's envy, while the gorgeous butterfly had not even a cranny it might claim as a home. Thus let the true bee-keeper seek to show his competency and skill by the flourishing condition of his apiary, leaving sesquipedlian words and fine-strung sentences to those who admire them.

Taking time by the forelock, so as to be ready for possible emergencies, let us suppose that the rigor of winter is over, that spring is approaching, and that in some of our hives supplies are running short. The question now arises what is the best mode of curing the evil? Prevention, indeed, would have been the better plan; but it is all too late now for that, though by way of caution for the future, it may not be amiss here to impress it on the beginner not to undertake to winter stocks inadequately supplied, if he can possibly avoid doing so. If he has a number of stocks from which to choose, let him select for wintering only those that are populous and have plenty of sealed honey in the combs. From all the weaker colonies, the bees should be driven out as soon as pasturage begins to fail, and the hives with the combs and honey they contain should be reserved for the use of early swarms in the spring, if pressing necessity do not require them to be otherwise used before that time. There is ever a strong temptation besetting the novice in bee culture to retain every colony he has on the stand, however feeble and unfurnished. Number has usually more charms for him than quality, as it aids better in making a display, and he feels a pride in showing how rapidly his apiary is growing. This is a sad mistake. In poor seasons indeed it is not always easy to select the stocks best fitted for wintering, but it is better to discard all those about which doubt may be entertained, and err if at all on the side of safety. Moreover, when it seems likely that any stock we desire to winter may need feeding, it is best to give it the necessary supply in the fall; and if liquid honey must be fed, it should be given so early and in such quantities that it may be promptly carried up and sealed in the cells. The amount consumed is not the same in every winter. In long winters with changeable weather, enabling the bees to fly out frequently, their stores will be rapidly diminished and there is danger that they may be wholly exhausted. Experience has shown also that among colonies equally well supplied, some will begin to be in want a month sooner than others, owing principally to a difference in the amount of population or more frequent disturbance. Nor is the quality of the honey equally good every year.

From all this it is manifest that it may happen to even the most circumspect bee-keeper, especially after poor honey seasons, that some of his stocks will need feeding towards the end of winter. Where cottage hives are used, it is not so difficult as many suppose to ascertain the state of the supplies at the approach of spring. Select a fine, bright, clear morning after a cold night, and if there has been a severe frost, all the better. In turning up the hive, its weight already will give the bee-keeper a pretty good idea of its contents. But as the bees are then still clustered in a compact mass, it is easy to see and judge of the quantity of sealed honey remaining, if the hive be so held or placed that the sun's rays may shine down between the combs, and an accurate knowledge of the strength of the stock may thus at the same time be obtained. A beginner, who fears to trust his inexperienced eye, may probe the combs where the sealed honey ought to be, with the point of a long carving knife or a slender pointed rod, and the same means may be used, for the like purpose at a later period, when the bees have already increased and spread so as to cover the combs. If at the first revision all the weaker stocks be marked, it will subsequently be necessary only to keep an eye on those.

The question now arises, in case supplies run short toward spring, shall *feeding* be resorted to, or *transferring*? On the whole, according my observations and experience, I prefer the latter, where the bee keeper is prepared to resort to it.

Feeding, in the months of February or March, is troublesome, expensive, often uncertain or precarious, and not unfrequently decidedly disadvantageous. It is troublesome, inasmuch as in those months the feeding box may not simply be set in the hive as at other times, but must be placed and secured in immediate contact with the combs directly below the clustered bees. If not thus placed and secured, the bees may neglect to descend and appropriate the offered boon; or if they do come down, they may become so chilled that many will be unable to return and rejoin the cluster, and thus infallibly perish. Some beekeepers, indeed, fill up the empty space between the feeding box and the combs, with hay, moss, cotton-waste, or other substances, or place a heated brick in the hive —though the latter occasionally proves to be decidedly injurious. The better plan, in any case where the apiary is near the dwelling house, is to remove the hive, after introducing the food, into a dark chamber, moderately warmed, and let it remain there over night. Feeding is expensive, because the bees will thus consume at least twice as much honey, as when depending on their own stores. It is precarious, because in very cold weather, the bees may fail to resort to the food, and perish notwithstanding it was provided for their use. But both trouble and expense might be disregarded, if it were always certain that fed colonies would subsequently thrive the better for such provident attention. But this is not commonly the case, and hence feeding is not unfrequently found to be disadvantageous. The introduction of the food, and the disturbance inseparable therefrom, causes the bees to uncluster, to consume honey inordinately, to fly at unseasonable times, and to commence brooding prematurely. If confined by stress of weather, they become diseased, and dysentery sweeps off thousands more than the early maturing brood can replace. If the weather permit them to fly, the odor of the honey on which they have fed, will attract bees from stronger stocks, and thus expose them to be robbed and ruined. The case is very different where a colony in need of supplies, can be at once transferred to a stored hive reserved for their accommodation—as will be shown in a future number. H. SCHULZE.

☞SEND us the names of bee-keepers, with their Post Office address.

[Translated for the Bee Journal.

Dr. Landois' New Theory.

According to Dr. Landois, sex in insects is not determined already in the egg when it is laid, but becomes so subsequently by the quality and quantity of the nutriment which the larva receives when disclosed from the egg. Individuals richly nourished, he conceives, will become females, while those poorly fed become males. Were this so, then in years of scarcity, when large numbers even of the human family are necessarily put on half rations, all the insects then bred would necessarily be males, and the entire race of bees must long since have become extinct, from the exclusive production of drones. Thus the views of Dr. Landois are at once seen to be erroneous, and inconsistent with the wise arrangements of Providence as displayed everywhere in nature. But in the special case of bees, the error is so palpable, that it cannot fail to be detected on the slightest examination. No one will, of course, for one moment think of testing it by repeating the experiments which Dr. Landois professes to have made, with such wonderful results. Indeed, he cannot well have made them himself, or, if he attempted to do so, was surely outwitted by the bees.

The fact that when the eggs have once been laid, the sex of the bee to be hatched from it, is already unchangeably fixed therein, and that neither cell nor food can subequently exert any influence on it in this respect, may readily be ascertained by a much more simple method. Nay, the bees themselves are very frequently demonstrating it by their own operations. It is well known that queenless bees will endeavor to rear queens from drone eggs or larvæ, when worker eggs or larvæ are not within their reach. They enlarge the cell and supply it lavishly with food for the nourishment of the proposed embryo queen. But no queen is ever produced by the process; though, if Dr. Landois were correct, failures could not possibly occur. Again, a young queen remains unfertilized, because she is unable to fly or was bred late in the fall when no drones survived. In the following spring she will lay eggs regularly in worker cells; and she does so because, at that season and while the population is still weak, she strives to produce workers only, and the workers themselves then certainly do not desire the production of drones. Yet drones, and drones only, invariably proceed from those eggs. How can Dr. Landois explain this, on his theory?

No, when the egg is once laid, the sex of the bee thence proceeding is certainly already unalterably determined. I am fully persuaded that no subsequent artificial impregnation can effect a change, because it has then already lost all capacity for impregnation, as the micropyle becomes immediately closed, and the entrance of spermatozoa is forever barred. The size of the cell and the abundant or scant supply of food can only effect the more or less perfect developement of the body and its organs, determining only whether the product shall be a perfect, a crippled, or a partially developed insect.

That external causes, and among them the food, should influence the color of the bees; and that, for example, Italian bees bred in elevated situations should be lighter colored than those bred at a lower elevation, as has been alleged by some, I will not undertake to deny, though I incline to doubt it. The opinion may be based on mistake or misconception. Italian bees adhering to a comb certainly appear brighter, when there are among them many young ones, quite recently emerged. Climatic influences, however, would require a longer time to exhibit an observable effect. A rapid modification of color might find its solution in an unperceived change of queen. But it would, at the same time, show that the bees under consideration are no longer pure Italians, or of a uniform and stable type. Among my bees at least, the color of the pure Italians continues always and uniformly the same, however much the nutriment of the bees may differ, in kind or quality, at different seasons. DZIERZON.

CARLSMARKT, May 26, 1867.

[Translated for the Bee Journal.]

Advice to Beginners.

When, on revision of stock in the spring, a colony is found to be queenless, it is not worth while to attempt to preserve it, unless a fertile queen can be immediately introduced. When this cannot be done, the most advisable course is to drive out the bees, and unite them with some colony, otherwise in good condition, though weak in numbers.

It is equally bootless to endeavor to build up a colony again, which has become weak and queenless from over-swarming. By the time the last after-swarm has issued, nearly all the brood in the parent hive will have matured and left the cells; and though a fresh supply of brood be given, the stock will have become so depopulated, before a queen can be raised and the young bees emerge, it is scarcely possible for it to recover, without continual nursing and reinforcement, so as to be in a condition to winter safely, unless there happen to be abundant pasturage late in the fall.

It is hence a very great advantage to keep constantly on hand in the apiary, a number of nucleus colonies in movable comb hives, of a size just adapted to accommodate six or eight combs with an adequate number of bees. The construction of such hives is simple and inexpensive; and in them colonies can be conveniently and safely wintered, when placed in a dark and dry cellar. There is so little trouble or difficulty in wintering such colonies that they cannot be too highly recommended for the use of beginners, especially in connection with their ordinary stocks. Though no queenless stocks be found in the apiary, it will be an obvious benefit when we come to make artificial colonies, to be able, while one portion of the hive to be divided retains the queen, to give to the other one already fertile taken from a nucleus colony.

To produce such a queen-raising stock, we close the entrance of a nucleus hive with wire cloth, insert two empty combs, with one containing eggs and unsealed brood, and one with honey. Then, about noon, when the bees are flying briskly, we lift out several combs of a populous stock, and shake off the bees into the nucleus hive--first ascertaining that the queen is not among them. We then immediately close the hive, and set it in a cellar or some cool dark chamber. Some water should have been poured in the cells of the empty combs, to prevent the destruction of the larvæ while the bees are kept confined. Next morning the nucleus may be carried to the apiary, and set in any desired position. The bees when liberated, by removing the wire-cloth from the entrance, will mostly adhere to the nucleus, as the greater portion are young and attached to the brood. But should too many leave, a fresh supply may be added next evening from one of the full stocks. On the third or fourth day after, the nucleus is to be opened and examined, to ascertain whether any or how many queen cells have been started. And on the eighth or ninth day as many additional nuclei are to be fitted up and stocked with bees, as you have supernumerary queen cells to dispose of. These nuclei are also to be set in the cellar over night, taken to the apiary next morning, and a queen cell inserted in each, from the first formed nucleus. Weak colonies and late swarms may also be advantageously used for the formation of such nuclei.

These nuclei, or small artificial colonies, as they may be called, must of course be kept under constant supervision, to be certain that the young queens have become fertile, or have not been lost on their excursions. In the latter event, a small piece of comb containing unsealed worker larvæ, should immediately be inserted, to prevent the orgination of fertile workers, because when such arise and begin to lay in a nucleus, the bees will neglect to rear queen cells from brood subsequently given, and will even destroy any sealed queen cells that may be inserted.

If these nuclei are made to supply two or three fertile queens, in regular succession, in the course of the summer, they will have sufficiently answered the purpose for which they were established. They cost very little, as they will generally gather honey enough to supply themselves; and commonly build several beautiful worker combs in addition, if empty frames are inserted at the proper time. If, however, they chance not to lay up stores enough to carry them through the winter, they should be abundantly fed early in the fall, and in due season placed in a dark cellar, where they can remain for months in quiet, consuming comparatively little honey.

To gain as much time as possible in these operations, one or two of the nuclei should be *unqueened* eight or ten days before the queen cells in the remainder are intended to be used. Queen cells will then be immediately started in those thus made queenless, enabling us to insert a sealed queen cell without loss of time in the nuclei which are afterwards deprived.

A much more rapid and surer multiplication of stock can be effected by this process than by that commonly adopted; and we shall always be in a position to relieve and save a colony which happens to become queenless, by the prompt introduction of a fertile queen from the "reserved fund," in our nuclei. This further benefit is likewise secured that the beginner will speedily become familiarized with his bees, by the frequent operations which the maintainance of those diminutive stocks necessarily requires; and as the bees thus managed, are ever more tractable than those of large and populous hives, he will soon learn to handle them without apprehension of being stung. The dread of the bee's sting ofttimes causes needed operations to be postponed, or wholly neglected. The sooner the beginner overcomes this dread the better; and nothing can contribute more to inspire him with courage and confidence than the systematic use of such nucleus colonies. So long as bee-caps and rubber gloves are deemed indispensable in his manipulations, he may not hope to derive much pleasure or profit from his bees. DR. BLUMHOF.

BIASCA, May 14, 1867.

Do King-Birds Eat Honey Bees?

A writer in the Northern New York *Journal* is inclined to think that they do not, and that their character has been unjustly aspersed. His theory is that they eat the drones, but not the workers. He says:

"To fully satisfy myself that this bird when so engaged, feeds only upon the drones, I have watched from a covert near the scene of operations, and seen him catch the drone from the worker bees that were swarming in every direction, and afterwards shot him down, and examined the contents of a well-filled stomach by the aid of a microscope. Although crushed and torn, the appearance of the fragments fully assured me in the opinion that I had observed correctly. The broken pieces exhibited none of the distinctive parts of the worker but all the peculiarities of the drone; such as no sting in the posteriors, short proboscis, prominent eyes, hairy exterior, no pockets upon the legs to carry pollen, &c.,"

During the present season he has watched a pair of king-birds very narrowly: "Not the least disposition could I discover in them to feed upon this insect until called by the loud humming of the drones; this was the signal for active operations. Since which time they have promptly responded to each call, manifesting as much correctness in their work as two boys spearing fish from a shoal by torchlight."

Now, the drone can only be a honey bee in the sense that he eats it voraciously, and if the correspondent's induction is wide enough to prove his case, all bee fanciers are called upon to change their opinion and treatment of an unjustly suspected friend.

Bee-Keeping.

From the American Encyclopædia, with additions and emendations.

The selection of a suitable place for an apiary is of great importance. The situation should be well sheltered from strong winds, either naturally, or by building walls or fences. If not sufficiently protected, the bees are prevented from leaving the hive, and when returning with heavy loads of honey and pollen, are blown to the ground, or dashed against trees and rocks, and thus many are lost. It is not well to have large surfaces of water very near, lest the bees, overcome by cold or fatigue, should be forced to alight on them, or be carried down by the winds and perish. The hives should especially be protected from north-west winds and from chilling south winds. It is necessary, when the winters are severe, particularly to regard protection from the cold, and from dampness. The hives may face the south or east, or south east; and thus the greatest benefit will be derived from the continuance of the heat and light of the sun during that portion of the day when they are most useful. Though where increase of stock by natural swarming is not a prime object a northern exposure will not prove disadvantageous, since bees love to labor in the sun and to dwell in the shade, and are more disposed to store up honey when placed in such a situation. The hives should be set in a right line. It is better to place them on shelves, one above another, than in rows upon the ground. The distance between the hives should not be less than three feet and their height from the ground should be about two feet. Some experienced bee-keepers, however, raise the platform of the hive not more than two inches from the earth, considering this preferable, because fewer of the fatigued or chilled bees that miss the hive in returning and alight under it, are lost, the flight of issuing swarms is lower, and there is less exposure to strong winds. It will be found of not a little consequence, to have the apiary where it can be conveniently watched in swarming time, but it should by all means be removed from annoyance and disturbance by men or teams passing and repassing, or animals laboring or grazing too near the hives. Grounds on which there are no large trees, but some of small size and shrubbery, on which the swarms may alight are preferable. The grass should be mowed frequently around the hives, and the ground kept clean, not only for the delight of the bees, but to prevent too much dampness, and to destroy the lurking places of various insects and vermin.

The proper construction of the hive is one of the things most essential to success in bee-keeping. Many different kinds have been invented, each more or less complex, designed to give certain advantages, and to obviate certain evils in managing bees and producing honey. Of these it will be sufficient to mention several of the most important varieties. The chamber hive is made with two apartments—the lower for the residence of the bees, the upper to hold the boxes in which the bees put their honey after having filled the lower part. The advantages of this are claimed to be a permanent cover for the boxes of glass or wood, or vessels of any kind put on the hive; a better protection from the weather, with less inconvenience in turning up the hive, and in fitting a shelter over it, than is found with a movable cover. These hives are sometimes made wedge-shaped, being several inches narrower from front to rear at the bottom than at the top, to prevent the combs from slipping down. They are also sometimes furnished with inclined bottom-boards, to roll out the worms that fall upon them, or are driven down by the bees. In practice, however, this latter arrangement has proved to be of little account, and these modifications have hence not been found to be of much importance. To protect the bees from vermin, several kinds of suspended hives have been contrived with inclined movable bottom boards. The dividing hives are made with several compartments, the object being to multiply, at the will of the bee-keeper, the number of colonies without the trouble and risk of swarming and hiving. When bees from any cause lose their queen, and the combs contain worker eggs or worker larvæ not more than five or six days old, another queen will usually be developed; and if this occur when drones exist in the apiary or in its vicinity, the queen thus reared will ordinarily be fertilized, and become qualified to lay both worker and drone eggs. But if no drones exist in the neighborhood at the time, with which the young queen can have intercourse, she will be able to lay drone eggs only, and the colony must inevitably perish, unless the queen be removed and one perfectly fertile substituted. By means of these divisible hives, the partitions of which are supposed to divide the brood-combs, a part of the bees and of the combs are removed and placed by themselves to go on making honey, and multiplying in every respect like a natural swarm. A very large number of stocks or swarms may thus be made, during the proper season, by a bee-keeper *having sufficient knowledge and experience.* The objection urged against this kind of hives are: the expense of construction, the frequency with which the bees are found to put all the *worker* brood-combs in one compartment, the difficulty of removing a part just at the times suited for the developement of a new queen, and the increased exposure to cold and starvation in winter by separating the bees in the different compartments.

Several inventions have been made to enable the bee-keeper to change the combs and get the honey without driving out or destroying the bees. Changeable hives are made in sections, generally three drawers placed one above another, holes being made to allow the bees to pass. When the boxes are all filled, and it is desired to change the combs, the upper box is removed, and its place is supplied by a new one put in at the bottom. This being done yearly, the entire contents of the hive would be changed every three years, and be kept new. It is held, by the advocates of this description of hive, that there is a necessity for changing the brood-combs, because the larvæ hatched from the eggs and sealed up in the cells, there spin their cocoons, which remain on the walls of the cells, when the matured insect goes out. This deposit, although extremely thin, diminishes the size of the cell, affording less room for each succeeding generation, thus causing the bees gradually to deteriorate in size. In practice this result is rarely known to cause any serious injury, though the gradual accumulation of nymphal envelopes in the cells unfits these in other respects for honey receptacles. The chief objection to this form of hive and mode of management, is its tendency to induce the bees to build drone comb inordinately in the lower compartment, which, by the *nadiring* process, then becomes the brooding chamber, leading to the excessive production of drones, and destroying the value of the colony as a honey-producing stock. Other advantages claimed for this kind of hive are : the facility with which small swarms may be united and large ones divided ; the opportunity it offers for feeding, by putting into the hive a box of surplus honey ; and the uniformity of temperature preserved by the airchamber between the drawers and the outside of the hive. On the other hand, the cost is considerable, and it is denied that deterioration is caused in the bees by the filling up of the brood cells, and time and honey are therefore needlessly wasted by keeping the bees constantly making new brood comb. This and the difficulty of putting the swarms into the hives, and the many lurking places they afford to the bee-moth, and also the difficulty of procuring in this method of taking away honey, that which is good and free from cocoon and bee-bread, in the opinion of most bee-keepers more than counterbalance their supposed advantages. Swarming hives are sometimes used. They are made with sections, so that by closing all or part of them, the space which the bees occupy is lessened ; and they are crowded out, and their swarming hastened. Hives are sometimes arranged so as to allow the bees to go on accumulating honey and increasing in number, and not swarm at all. A hive of bees is put in a bee house, and empty hives connected with it, so that as soon as one becomes filled the bees pass to the adjoining ones. In some instances great quantities of honey have been obtained by this method ; but it has not generally been found practicable or profitable. The result of all the experiments made in this country, with complicated and ingeniously contrived hives, and also in Europe where equally many attempts have been made to adopt artificial tenements to the simple instincts of the bee, tends to show the superiority, for practical purposes, of the simpler hive. The introduction of the movable comb hive, is the only real advance that has been made in this direction, beyond the plain old box or straw hive ; and even in this all deviations from its original, plain and simple form, are in reality deteriorations, rendering them cumbersome and incommodious, tending to defeat the chief object in view—the facility of controlling the bees and directing their labors.

For protection against the extremes of heat and cold in summer and winter, straw hives are excellent. In Poland, where finer honey is produced, and bees are more successfully managed than elsewhere in Europe, where movable combs are not yet used, hives are very generally made by excavating trunks of trees, taking logs a foot or more in diameter and about nine feet long. They are scooped out or bored for the length of six feet from one end, forming hollow cylinders ; the diameter of the bore being six or eight inches. A longitudinal slit is made in the cylinder nearly its whole length and about four inches wide. Into this is fitted a slip of wood with notches on the edges large enough to admit a single bee. This slip is fastened in with wedges or hinges; and if it is in several parts, it will be found the more convenient. The top is covered, and the trunk set upright with the opening towards the south. Through this door the condition of the entire swarm is seen, and the honey taken from time to time. The length of the hive and its small diameter, fit it for both large and small swarms.

One of the best kind of common hives is made of pine boards, an inch or an inch-and-a-quarter thick. The best size is twelve inches square inside, and fourteen inches deep. If to be exposed to the sun and rain, they would be better painted. The top is made of boards, and is fifteen inches square. The boards should be joined carefully ; many put paint between the junctions, to keep the moths from breeding in them. It saves the bees much labor if the inside of the hive is planed and cleaned, and covered with a thin coating of beeswax. It should not be washed immediately before a swarm is put in, with either water or spirits, or any liquid that would prevent the comb from adhering readily. Cross sticks should be put in to support the comb. Small notches should be made in the bottom of the hive for the passage of the bees. Boxes for caps or covers may be made, if the chamber hive is not preferred, about seven inches deep and twelve or thirteen inches square. If glass vessels or others are to be used to receive the honey, they may be put under these caps, or the caps may be used alone. They should fit close to the tops of the hives, several holes being made in the tops for the passage of the bees. The bottom-board should be fifteen inches square, at least large enough to give the bees space to alight and expatiate. It is better to give each hive a separate stand. If protection from vermin and insects is required, the hive may be placed on a single pedestal two feet from the ground ; but if there is no danger from them, nor from dampness or snow, they may be nearer the ground. The hives need some cover from the sun and rain. A separate one for each may be easily made by putting together two boards, one-and-a-half or two feet long, and of the necessary width, letting them incline to each other so as to form a roof. Bee-houses are found not absolutely necessary, and worse than useless when not rightly constructed. It is well to guard against shading the hive too much in the spring and fall ; against preventing a free circulation of air all around them in summer ; and exposing them too much in the middle of the day to the sun. The bee-house should not in cool weather, make the temperature around the hives much higher than the bees will encounter at a distance. The simple movable covers just mentioned, which are easily adjusted as the season demands, with hives made of boards of sufficient thickness, well painted to prevent warping, will generally prove an ample protection, except in very cold winters.

New swarms generally appear during the months of June and July; but sometimes as early as May, or as late as August. The swarms are usually hived when the brush or whatever they alight on can be removed, by shaking them off in front of the hive, which should be a little raised on one side to facilitate the passage of the bees. When they collect where they cannot be shaken off, and the hive cannot be placed near, they may be brushed quickly into a gauze sack or any vessel in which they can be kept and carried to the hive. It is generally irritating to the bees, and unnecessary if not useless, to endeavor to make the swarms collect and settle by a din of horns, tin pans, and bells. They will sometimes collect on a pole with a few branches, some broom corn, or dry mullein tops, or similar things fastened to the end and held in the air. They may sometimes be arrested when going off, by throwing jets of water or fine earth or sand among them. Various means are used on such occasions to disconcert them, and with about equal success. It is very seldom that a swarm starts for its chosen destination without previously alighting. If two or more swarms issue at the same time and unite, they may be separated, if desired, by shaking them from the branch between two or more hives placed near together. Should the queens enter the same hive, the bees must be shaken out between empty hives as before, and this operation repeated till the queens enter separate hives, or the bee-keeper is able to catch one or more of them and put them with the bees where wanted. Or, if there are only two swarms united, a part may be separated and returned to the parent hives, and the rest put in one hive; or they may be all put in one and boxes put on immediately. It is sometimes desirable to unite small swarms. This may be easily done if they issue about the same time, by inverting one hive and placing the other over it; the bees in the lower will ascend and join those in the upper. When for any reason it is wished to defer for a short time the issue of a swarm which the signs indicate to be just at hand, the bees on the outside of the hive should be sprinkled with water. This is effectual, but only before the swarm has started. Sometimes the swarm issues and returns several times. If this is owing to the inability of the queen to fly, she should be found if possible, and put with the others in the new hive. If the weather be such as to prevent the new swarms from going out to collect honey, several days immediately after being hived, it may be necessary to feed them.

Many bee-keepers have discarded the practice of killing the bees to get the honey; the surplus, after enough has been stored in the hive for winter, being taken away by means of boxes, or, if these are not used, cut from the hives, the bees being driven back and partially stupefied by smoke. The comb is to be cut off clean so that the honey may run as little as possible upon the bees. The boxes should be put on a little before the hive is full. Polish apiarians cut out the old comb annually to lessen the tendency to swarming, and thus obtain the largest amount of honey. The old practice of destroying the bees, except those intended for wintering, after the hives are filled and the honey season has passed, still prevails extensively—though it should be discouraged and discontinued. The time for taking up hives depends somewhat on the season and the bee-pasturage. The quantity of honey does not generally increase after the first of September. The bees are sometimes deprived of the entire store of comb and honey, in the early part of the season, generally about twenty days after the first swarm has left, by driving them out and giving them a new hive. When the old hive is infested with moths, or the comb is not good, and it is desirable to winter the bees, this operation may be expedient. It is performed by inverting the hive and putting the other into which the bees are to be driven over it, making the junctions close, and tapping with the hand or a stick on the sides of the hive. The bees will then pass up to the new hive, which is then removed to the apiary and placed where the hive from which the bees were expelled previously stood.

Hives are sometimes attacked and robbed, either because they are queenless, or are weak, or other bees are attracted by broken combs, or by food put near them. It is useless to attempt to save a queenless colony after it is seriously attacked and the assailants are numerous; but a weak colony that has a fertile queen should be removed to a cellar, or some cool, dark place, and kept there two or three days. It is sometimes sufficient to close the entrance so as to admit but one bee at a time. It is beneficial to put a similar though empty hive in the place of the one removed, and rub the bottom board inside with wormwood leaves or the oil of wormwood. The odor of this is so disagreeable to the bees, that the robbers speedily forsake the place. Breaking the combs in the hive of the robbers, or strewing a handful of saw dust in it, will generally make them desist, by giving them employment at home.

The quantity of honey usually necessary for wintering safely a swarm of bees is thirty pounds. Those that are found in autumn to be weak in numbers, and with a scanty supply of honey, should be taken up. Only the strong stocks are profitable to winter. Brown sugar made into candy by being dissolved in water, clarified and boiled to evaporate the water, is the best food for bees. The syrup should be boiled till it begins to be brittle when cooled. This or common sugar candy may be fed to bees, in the hives, under them, or in the boxes. If fed in the liquid state, it may be introduced into the hives in dishes, with some clean cut straw strewn over it, to enable the bees to eat it without getting into it. Where feeding is likely to be necessary, it is always best to furnish the bees with an adequate supply in autumn. If feeding is resorted to in the spring, it should be continued till flowers become abundant. Honey is of course the best food, yet sometimes too expensive. If candied, it should be heated till dissolved. Feeding should never be attempted as a matter of profit. The best honey cannot be made from cheap honey and refuse sugar or molasses; it is not made by the bees but gathered by them from the flowers. Of these white clover is the principal source of supply. Fruit trees, basswood, locust, and maple yield abundantly and of fine quality; buckwheat furnishes a large quantity, excellent for winter food of bees, but inferior for the table, as it is dark and strong-flavored.

The bee-moth is the greatest foe the apiarian has to contend with, where the common box or straw hives are used. All moth-traps and moth-proof hives are sheer humbugs. The best safeguard is to be sure to have only young and fertile queens in the colonies; otherwise constant watchfulness from May to October is indispensable. In day time the moths remain in their hiding places, and may often be found about the hives. They are on the wing in the evening, hovering around the apiary or running over the hives, endeavoring to enter and deposit their eggs. Many may be destroyed by entrapping them in shallow dishes of sweetened water, with a little vinegar added. Hollow sticks, small shells, and similar things are often placed on the bottom-boards, where the worms hatched from the eggs may take refuge and be destroyed. It is necessary to look often under the bottom of the hive, and if one side is raised (as is required for ventilation in warm weather) under the blocks or shells on which it rests. These caterpillars, at first not thicker than a thread, are of a yellowish white color with a few brownish dots. They live on the wax, eating it, and filling the combs with webs. They protect themselves from the bees by a sort of silken sack, which they spin and in which they lodge. When they have attained their full size, which requires about three weeks, they spin their cocoons. In these they remain enclosed some time and change to chrysalids of a light brown color, with a dark elevated line along the back. A few days afterwards they are transformed to winged moths, issue from the cocoons and are soon ready to deposit eggs, for another generation. Rats and mice do not attack the hives except in winter, unless the combs are unprotected by bees. They are easily removed. There is a disease called "foulbrood," which sometimes is very destructive to the young bees in the larvæ state. They die in the cells and become black and putrid. The disease appears to be in a measure infectious, and it is exceedingly difficult to eradicate when once introduced in an apiary.

Many different methods are practiced in wintering bees. It is necessary to protect them especially from two things—from being frozen, and from being starved. The latter happens when they collect together closely, in the coldest weather, and the combs become covered with frost and ice, the moisture from their bodies and from the air being there deposited and frozen, excluding them from the honey. The entrance to the hive is liable to be closed with ice, and the bees thus suffocated. The bee never passes into the torpid state in winter, like some other insects; it perishes at a degree of cold low enough to freeze it. As in the case of other kinds of farm stock, it requires less food when kept warm and comfortable. If the hives are to be carried into a house or cellar, the place for them should be cool, dry, and dark. The best method is to house them, unless sufficient protection can be given them on their stands. The Russian and Polish beekeepers, who manage bees as extensively and successfully as any, winter their hives on the stands; but they make their hives of inch-and-a-half plank, and wind the upper part with twisted ropes of straw or cordage to increase the protection against extremes of heat and cold. If left on the stands, hives made of common boards need additional covering in the colder climates; the entrances should also be narrowed so as to leave only space enough for a single bee to pass. This must not be allowed to become stopped with frost and ice, or dead bees and filth. Light snow may cover the hive without danger. The practice of beekeepers is about equally divided between these two modes of wintering. The success of outdoor wintering would be greatly increased by making better hives, by better protecting them against extreme cold; and from changes of temperature. It is easier and preferable when the number of hives is very large, and there is no danger of theft, to manage them out-doors than in-doors. With a small number it may be otherwise.

The time for carrying bees out from their winter quarters is in the month of March, except in very backward seasons. A few bright cold day swill not be more destructive to them than too long confinement. If new snow has fallen, and the weather is not sufficiently warm for them to venture into the air safely, the hives may be shaded from the sun, or the bees confined in the hive. If they are to stand very near each other, it is not well to carry a large number of hives at once, the bees at first not readily distinguishing their own. The hives should be raised from the bottom-board only on one side, if at all. Many prefer if the bees are not especially numerous, to let the hive rest entirely on the board, allowing less room for passage, and securing greater defence against intruders. More ventilation than this affords may be required in warm weather, when, if liable to suffer from heat, the hive may be raised entirely, proper means being furnished for the bees to ascend from the bottom-board.

The careful beekeeper has long desired to possess some method of measuring the daily increase or decrease in the weight of his hive. A German publication states that a beekeeper took the trouble to weigh one of his hives twice a day—before the bees left in the morning, and after their return at night—and thus he determined the nightly loss by consumption and evaporation. These observations were continued from May 5 to August 2, a period of ninety-one days, and the results are very interesting.

On May 5 the hive weighed 64 pounds; it lost two swarms weighing 12 pounds, yet on Aug. 2 it weighed 120½ pounds. There was no increase in weight from June 28 to July 21, except ¼ pound on one day and ¾ on another, and from July 17 to Aug. 2 the whole increase was only three pounds. The work of each day is minutely recorded and the results go to prove that the beekeeper should have some means of ascertaining the weight of his hives daily throughout the season. A method of doing this has been invented by Mr. Shirley Hibbard, of Tottenham, England. It consists of a turned pillar, made after the fashion of a telescope, working like a piston in a brass or iron cylinder. Beneath the pillar is a spiral spring, on which the pillar rests. Two slits run down the side or front of the cylinder, and between them an index is marked. A finger is attached to the base of the pillar, and the hive adjusted on the top of the latter, so that as it presses down on the spring the finger marks the gross weight of the whole. A thumbscrew passes through the cylinder, and by pressing against the pillar holds it in a fixed position whenever it may be desirable.

Beekeeping has in some instances been made very profitable. Much depends on the season and on the pasturage. The value of the best honey is, in a great degree, determined by the style and state in which it is brought to market. It will generally be found most advantageous to use glass vessels or boxes, and to send the honey to market in the same.

[For the American Bee Journal.]

Introducing Queens.

THE SIMPLEST, SUREST AND MOST EXPEDITIOUS MODE.

Take a stick of candy, of any peculiar flavor, dissolve it in hot water, and sweeten with honey or white sugar, adding cold water enough to make a teacupful of the sweetened mixture. Have your queen, to be introduced, ready in a wire cage, or nucleus hive; drive out the bees into an empty hive or box; remove the queen from them, and sprinkle the mass of bees thoroughly with your sweet-scented water; stirring them up until all are scented and filled with the sweet mixture; then turn your queen among them, sprinkling her as she goes in, and make them all crawl back into the hive over a sheet on the alighting board, and your queen is *safely* introduced. This is done so quick the bees do not realize the change.

GEO. HARDESTY.

MALVERN, (OHIO,) July 20, 1867.

[For the American Bee Journal.]

EDITOR BEE JOURNAL: I see in the columns of your excellent Journal one or two cases corroborating two cases in my own experience.

The first is, that I placed in a maturing box a queen cell, and examined it in two or three days. At first sight I thought it was destroyed, being opened on the side of the cell, the apex being entirely closed. But, to my surprise, the next moment I saw a beautiful young Italian queen, which became fertilized and was perfect.

The other was this: I raised a card from a nucleus, to learn how they were progressing with cells. The first thing I noticed was an opening in a cell, just similar to the one described. The thought at once occurred that there was a queen at large committing havoc with my cells. I then saw an opening in a queen cell, just as if a queen had committed violence on it, and near it was a beautiful queen, which afterward became fertilized. Hence we are confirmed in the conclusion that there are exceptions to the rule that the position of the queen at the time she comes out of the cell is *always* head downward.

ADDISON JOHNSON.

PLEASANT PLAIN, OHIO.

For the American Bee Journal.

Purity of Italian Bees.

I was very much pleased with Prof. Varro's article, in No. 1, volume iii, of the BEE JOURNAL, on this subject. It is certainly the fairest and most satisfactory which has been given by any American bee-keeper in your paper.

There must be a great deal of harm done the bee interest of the country by the immense number of impure queens sent out yearly, by men who ought to know better than to go into the business before they had made themselves perfectly familiar with the markings of the Italian bee, as settled by "the best" *European* "apiarians."

It is surprising to see how boldly the gentleman who considers one band all sufficient, sets forth in his circular, as tests of purity, the very marks and temper, which any one who has read volume i, of the BEE JOURNAL, or Mr. Langstroth's writings on the subject, knows are certain indications of mixed blood. I procured last year an Italian queen (tested) from a gentleman of Baltimore, Maryland, who has the Italians in their greatest purity. And, although I have opened the hive continually, both last season and this, to obtain brood for queen-raising, I have not received a single sting, nor have I seen a bee, young or old, gorged or empty, that did not show distinctly *three* yellow bands. Prof. V.'s remarks about the price of pure queens are most sensible; no one could sell *pure tested queens* at less than $15 or $20, and be paid for the time and trouble he would have to spend with them. There is one thing more I was in hopes Prof. V. would notice—that is, the practice of sending out queens untested, with guarantee to replace them if their progeny is impure. This manifestly leads to the sale of many bastardized queens, for in most instances the purchaser never saw an Italian bee, and has to rely entirely on the descriptions of interested parties to judge of their purity.

Would it not be the best, indeed the only way to insure pure blood, for dealers to send out none but tested queens, and to charge fair living prices? D. M. WORTHINGTON.

ELKRIDGE, MARYLAND, July 13, 1867.

[From the Prairie Farmer]

American Bee Plant.

(*Cleome Integrifolia.*)

This plant has been cultivated to some extent in this neighborhood for several years past, and proves to be one of the best, and probably the very best honey-producing plant known. It was introduced by the writer about the year 1860, as a new annual flowering plant, from the Rocky Mountain region, but its great value was not at that time known, and was not discovered till a year or two after, when the writer was surprised to see the flowers covered with bees, while others, in the immediate neighborhood were quite neglected. The next year a much larger quantity of the plant was grown, and it was found that the honey stored in boxes at the time that the plant was in bloom, was of a much finer quality than any other. Every succeeding year of its cultivation confirms this, and I find that while this plant was in bloom, nearly all other flowers were discarded ; even the buckwheat, which every one knows is a great favorite with the industrious little fellows, is quite deserted. The honey stored from this plant is positively the finest, both to the eye and palate, of any that I ever saw.

The plant is of easy culture and looks well in the flower garden. It is a strong grower, and much branched like the common mustard plant, though its flowers are a bright purple, and are produced from midsummer until frost destroys it in autumn.

It will grow on any soil, though a rich one suits it best, and may be sown in drills, or broadcast if the ground is clean. Autumn is the best time for sowing it, as it comes into bloom sooner. It has already acquired the local name of "Bee Plant" in this vicinity (Chicago,) and as it is indigenous, I propose that we call it the Great American Bee Plant.

H. A. Terry.

Honey-Guide.

CUCULUS INDICATOR.

The birds to which this name is given inhabit various parts of Africa, and are closely allied to the Cuckoo tribe, but differ from them in hatching their own eggs. They are celebrated for their curious habit of guiding the natives to the nests of wild bees, enticing them to the spot by flitting before them and reiterating a peculiar cry. They have a solid, conical and arched beak, small head, body long and straight, toes strong and short, and wings reaching to the middle of the tail. The feathers are short, hard, and compressed close to the body, and the skin is so thick and tough as to protect them effectually from the stings of bees, unless the enraged insects attack their eyes. The nest of this Honey-guide is composed of slender filaments of bark woven together in a form of a bottle, the neck and opening hanging downwards; and it is said to be constructed in the hollow of trees, which the bird climbs like a woodpecker. The general color is an olive green, brownish on the upper parts, and inclining to yellow beneath. One species is described as being about seven inches in length, and another as ten inches. They are called respectively the Little and Great Honey-guide.

[For the American Bee Journal.]

Saving Queens.

Some time ago one of my colonies of Italian bees attempted to swarm out, but I arrested it and prevented the desertion by capturing the queen. On letting her run back into the hive, the returning bees attempted to kill her. I caged her for protection, placing the cage between the two central brood combs. Next day the same colony attempted twice more to swarm out, but had to return as the queen could not follow the bees. As the queen was a very valuable one, I removed her to a queenless colony, and substituted for her a queen cell nearly ready to hatch. Examining the colony the following day, I found that the queen cells had been destroyed, and the bees were building others from their own brood.

In every instance where a colony attempts to swarm out, the bee-keeper would do well to take away the queen, and use her to supply some queenless stock, if he has any. Such removal is a useful precaution, as, with me, in a number of instances the bees killed their queens, when for any reason she was unable to accompany them in their proposed desertion. A. Grimm.

Jefferson, Wisconsin.

[For the American Bee Journal.]

A Singular Case.

On the 4th of April last, a stock of Italian bees just taken out of its winter quarters, had some sealed drone brood on a comb almost five inches square. I suspected that I had found a queenless stock with a fertile worker. Re-examining a few days afterwards, I found a young worker bee just hatched, and about half a dozen cells with sealed worker brood. As the colony was in a box hive without movable combs, I could not see the queen. About a week later I found two sealed queen cells, and the quantity of drone brood increased. Of course I did not expect that a queen would be hatched from these cells. Looking again a little over a week later, I found one of them opened regularly, and on further examination on the 27th of May, I found fresh sealed worker brood. I would add that the drone brood was in drone comb, and not, as is usually the case in such hives, in worker comb : and the cells were built on the edge of the comb, as in swarming time. Did the queen deposit the eggs in those cells, or did the workers transport a larva into them? If so, how has it happened that they made no blunder, considering that there were or must have been at least fifty drone eggs to one worker egg in the hive ? Why did this middle-sized colony rear so much drone brood so early in the season, when no other hive had any drone brood yet ?

Jefferson, Wisconsin. A. Grimm.

[For the American Bee Journal.]

Purity of Italian Queens.

Dear Bee Journal:—I haste to make you acquainted with a great discovery which I have just made; at least a great one to me, perhaps your readers may not all concur in the statement.

Before detailing it I will briefly enumerate the advantages of some plan by which we may tell immediately whether a queen or her progeny is tainted with black brood or not.

The first test given us is, that a queen's workers shall all have the three yellow bands distinctly.

But it has happened so often that a hybrid queen will produce workers almost perfectly marked, that we think it would be very difficult indeed for a novice to distinguish by that alone what queen he might rear from.

Again, we are told that none can be considered as pure unless their royal daughters, when impregnated by their drones, produce three-banded workers, &c. &c. Now this test I have found a very good one; but, Mr. Editor, "aint it an awful sight of trouble?"

Still again—and we think a little more in the right direction—"Impeccability of temper," as one correspondent said (we forget his name,) with the linen pants on, who sat down on the frames.

Now, how are we to test their temper? I once, last fall, so irritated the progeny of a twenty dollar Langstroth queen, that it was almost impossible to go within two rods of their hive, and this was occasioned only by trying to remove some brood on a cold morning after forage had nearly failed. Yet they were as peaceable as ever next day. On the other hand I have a colony of one and two ringed hybrids that are nearly as peaceable as the pure ones, having never been irritated.

Now for the test. One of the first and most distinct peculiarities from our common bees that I noticed, was that the workers accompanying my twenty dollar queen, would allow themselves to be breathed on without noticing or resenting it in the least; whereas nothing so exasperates and provokes to fury black bees, or those having any *taint* of the black race, as breathing on them.

A few days ago, in showing a friend the docility of the Italians, I stooped down and breathed full upon them, as they were clustered out in front of the hive; nay, I even pushed them away with my lips, without their betraying any symptoms of anger. To show him the difference, I then breathed slightly on a hive of black bees near. Of coarse I had a lot of them promptly in my face. I next tried it on a hybrid stock (first putting my millinet veil over my face.) The effect reminded me of a charge of buck-shot. The same result with my quiet hybrids already mentioned; and the same with a colony that I had considered pure, until I tried to raise queens from them; a colony where the young Italians were just hatching, flew in my face, all except the Italians, which stood their ground with perfect unconcern.

Now, all ye that would know if your queens are pure, go and breathe on your bees in front of the hive, and my word for it, *if they are pure*, you *cannot* arouse their anger by so doing.

I fully expect many dealers in Italian queens will protest against this test, and well they may; and perhaps they too will conclude that a queen that will stand that test, is worth twenty dollars, as per correspondent before mentioned.

A. I. Root.

Medina, Ohio.

P. S.—I don't use tobacco, nor whiskey. Either will interfere with the validity of my discovery.

P. S., No. 2.—If any of your readers get their eyes swelled up, so that they cannot see at all, bid them remember that it is in a great cause.

On receiving this communication we sent an account of Mr. Root's discovery to Prof. Varro, of Washington, Pa., requesting him to test it, and communicate the result. He has obligingly favored us with the following confirmatory reply. [Ed.

For the American Bee Journal.

Mr. Editor:—In acknowledging your favor of the 6th inst., together with the reception of the first volume of the "Journal," I beg your leave to subjoin a few desultory remarks upon the various heads which of late, have made their appearance in your publications and elsewhere, directly referring to apiculture.

The use of rotten wood as recommended by Rev. L. L. Langstroth, Third Edition, Page 27, foot note, and by him considered *best*, Page 154, same edition, I consider as nothing very *extra* in practical bee culture, although its praises have been repeatedly resung (B. J , Volume Second, Page 227, and Volume Third, Page 20.)

In dissenting from the views above entertained, it seems but fair that I should state my reasons for doing so. By the substitution of "Killickinick" for rotten wood, or rotten rags, you can on removing the honey board, expedite one whiff transversely over the frames, and at the same moment shift and lift any frame from the body of the hive, before the bees seem to be aware of your presence. By now jerking your *one-banded Italians* upon the remaining frames and sending another whiff after them, none will usually remain above *for a second* or so.—Try it —and thus you may at the same time "worship your idol," spare the wings of many bees, and save your trouble of hunting, storing, preserving, rehunting and preparing your welcome rotten wood. I am well aware that our Rev. friend, L. L. Langstroth, dissuades the genuine lover of bees from using the sickening fumes of tobacco, and lest I be accused of encouraging a bad habit, the genuine lover of bees, or the keeper of a whole swarm or two, or the apiarian of a hundred *pure Italian stocks*, may use *sweetened water*. If you concede that the "smoke pipe" is more handy than the "smudge," considering that with the use of the latter it is next to impossible to replace a frame, without crushing a bee or two, I shall hold my pipe forever.

The "Experience of a Novice in Bee-Keeping," affords me a great many ludicrous reminiscenses, and accords so fully with my own, in its earlier stages, that I could not improve upon his rehearsal, if I would, although (No 5 of his Experience) in speaking of buckwheat, he might have reminded the "several bee-keepers about here" as well as many of your other readers, who, not like Dr. Watts, seem to think "the little busy bee" gathers honey "all the day," but all the year, that, as Mr. Moneypenny would say, "a sixpence saved is a shilling earned." Work on, friend, you are at the "root" of certain achievements worthy of your name.

It has been suggested to me by an enlightened, practical and scientific apiculturist, that since my first communication to the American Bee Journal, another sure and infallible test of Italian bees has been discovered—apart from their markings. It is this:

The workers will allow themselves to be breathed upon without noticing or resenting it in the least—whereas nothing so exasperates and provokes to fury, black bees, or bees possessing any taint of the black race, as the breath from the human lungs. Says he, "a few days ago, on showing a friend the docility of the Italian bees, I stooped down and breathed full upon them as they were clustered out in front of the hive. Nay, I even brushed them away with my lips without their betraying any symptoms of anger. To show him the difference, I then breathed slightly on a hive of black bees near. Of course I had a lot of them promptly in my face. I next tried it on a hybrid stock, first donning a millinet veil. The effect reminded me of a charge of buck-shot. The same result with my quiet hybrids. The same with a colony that I had considered pure until I raised queens from them. A colony where the young Italians were just hatching was next tried; all flew in my face except the Italians, which stood their ground with perfect unconcern."

I felt a great curiosity to ascertain how my bees would behave under similar treatment, and immediately proceeded to offer the just described insult to twenty-four stocks of Italians, and one stock of blacks which I bought about three weeks ago, forthe purpose of locating a supernumerary fertile Italian queen. The result of four different visits, with slight variation in operation, are as follows.

First visit. Friday, August 9, 6 o'clock, P. M. After breathing *full*, and at once *loud and long* upon each of the twenty-four Italian stocks, the effect was nothing more nor less than the same volume and amount of breath would have had upon standing water. By prolonged repetitions of breath, the individual cluster of each hive gradually became thinner and thinner, till finally I had cleared them all or nearly all from the spot where the cluster was, so much so, that in every instance I could see the color of the hive.

The blacks resented but slightly, at first, but gradually the number of angry bees increased, till I thought it wise to retreat.

Visit Second. Saturday noon following, when not so many bees were as yet clustered out, the weather being sultry with indications of rain, and my breath purposely *well flavored with a claw of garlic*, the effect upon the Italians was in every respect the same as on the first visit. But the blacks at once manifested by their threatening attitudes considerable anger, and a perfect storm of bees suddenly appearing at the entrance, I left.

Visit Third. Which took place about fifteen minutes later; the Italians still stood their ground bravely, though many wondered what was going on out of doors, and felt a little uneasy at my repeated calls. Still not more than two or three of each stock flew at me, and these seemingly without any bad intentions, as several of them becoming entangled in my beard, escaped in perfect amiability. The black ones, during the half hour's interval since my last visit, having considerably increased in number, did not wait at this time till my *sweetly scented lips* came within kissing distance, but unceremoniously met them half way, singing and buzzing around the drum of my ears, till with the Ettric Shepherd, I thought "they were in at the ae hole and out at the ither—back again after makin' a circuit, as if they had repented o'letting you unharmed, dashin' against the face o'you who are wishin' ill to nae living thing."

In the evening after this catastrophe, I found five young queens torn from their cells, lying dead before the black stock.

My last effort at arousing the ire of my Italians was made on Sunday morning, about 9 o'clock, without the aid of garlic, of course; but by using a turkey tail feather, I wished to ascertain how often I could brush them towards the entrance without exasperating them. Of some stocks I could thus push back the bees as high as nine and ten times, without their endeavoring to stick to the feather. None took wing, but quite a number, at this time, were exhibiting great displeasure. The blacks were still very angry and I preferred not to worry them again.

I have stated in a former article that I think my Italian bees are pure, and again I must reiterate my conviction, or say (though I be myself) my breath during the several above-mentioned courtships, must have been exceedingly sweet.

The fact that the common bees behaved so unladylike, should in this instance not be altogether attributed to breathing upon them, as it is a well-known fact that bees at the time of rearing their queens are more susceptible to anger than at any other time. It is quite probable that these oft repeated disturbances took place at the very time when the young queens found before the hive were on the point of hatching, which seems to be the culminating point of a black bee's irascibility.

If this additional test were universally adopted as the standard of purity in Italian bees, and every queen whose progeny did not come up to it, were unconditionally rejected as an unworthy mother, who would dare say, with any show of plausibility, that these beautiful, useful and exceedingly interesting insects, might not, within the present century, be indefinitely improved.

Will not your correspondents give this matter a thorough investigation, and lend us a helping hand in the elucidation of this very important point? PROF. VARRO.

WASHINGTON, PA., August 12th, 1867.

[For the American Bee Journal.]

Experience of a Novice in Bee-keeping.

No. 6.

As I before remarked, my bee-keeping for the summer of 1866 was not very profitable. Had I not endeavored to increase my number of stocks so much, I should have done much better. My two strongest stocks that were Italianized early, made about forty pounds of surplus honey each, besides having plenty for winter, which was much better than any common bees did about here.

I prepared twelve colonies for winter, in what I supposed to be the best manner. I lost four of them, and among them my twenty dollar queen. I will give my reasons for the loss, that others may profit thereby, if they think proper.

The first three were composed mainly of bees from condemned stocks, obtained from neighbors about the last of August. They were so nearly without honey, from then till November, that very little brood was raised. They were then fed so as to weigh twenty-five pounds each, aside from the hive. They all had plenty of honey in the spring, but very few bees; and these too all died off before it was warm enough to raise more, for the reason, I suppose, that they were too old, having mainly been hatched in August. Bees, to winter well, should, in my opinion, have *honey sufficient to raise brood in the fall months* to winter over.

With my Langstroth queens the case was different. I intended that they should winter well any way; so I gave each of them two heavy frames of sealed honey, which I put at the sides of the hive, supposing that they could get it as they needed it, leaving several frames in the middle from which I had cut brood for raising queens so late in the fall that it was not built up again. I found the bees frozen as hard as a bullet, apparently as though they had been unable to get at the frames on the outside at all, although I had cut proper winter passages in all the combs. They had proper ventilation also, as the honey-board was removed, and replaced by a double layer of corncobs. I think if the full frames had been placed in the middle, they would have been all right.

As an experiment I put two fair colonies in one hive. Contrary to what is generally told us, they *did* consume the whole of their twenty-five pounds, before some of the weak colonies had consumed fifteen; and did not do much better in the spring either, perhaps because they were mostly old bees, as mentioned before.

I would like to ask here what we are to understand by the statements we have of buried colonies passing the winter on three or four pounds, or even as many ounces, as mentioned in the July number? My experience would show that bees eat nearly as much in the warm weather in the fall, as they do in the winter; and in no case less than 2½ pounds per month per stock. Do they mean that the bees, at a certain temperature, assume a semi-torpid state and scarcely eat at all? In no other way can we explain it, if such *is* really the fact.

The present season, here, has been much better than the last, so much so that we feel pretty well satisfied with the results.

I enclose an extract from a country paper, which though not so large in comparison with the statements in the BEE JOURNAL, is considerably ahead of any thing we have ever had here from the common bees.

[From the Medina Gazette]

Italian Bees and Scientific Bee-Culture.

In answer to many inquiries we would state that we have a single hive of Italian Bees, that have already (this season) filled three boxes, averaging twenty pounds each, with honey, and a fourth box is at present fully three-quarters full, making about 75 lbs of box honey, and are still storing it rapidly. The same stock was swarmed once artificially the last of June, and the swarm has, besides filling their hive, nearly filled the second box, which would amount at the present time to something over a hundred weight of box honey, as the proceeds of a single hive.

It having been said that all of the large statements in regard to Italians were from interested persons, so we would remark before making the following statement that we have neither queens, bees, nor hives to dispose of, but do it simply to show what may be done by Italians and artificial swarming.

On the 22d of June, a strong Italian stock was removed while the bees were flying, and an empty hive containing a young fertile queen put in its place. The returning bees soon made a good swarm and in twenty-four hours the hive was suprisingly heavy, and in 48 hours it had increased *thirty pounds by actual weight.* The hive was furnished with frames of empty comb from which the bees had died last winter, or this would not have been possible.

On the third day a box was given them which they commenced in immediately and they are now, July 29th, at work on their third one, having filled two. We should be pleased to hear some figures in regard to common bees this season, from those that have them.

We propose taking the entire produce of our best stock (the first mentioned) to our coming Agricultural Fair. Respectfully,

A. I. ROOT.

ERRATA— In our article No. 5 in the July number, are three errors, viz:—

Line 24 from the top, "in" is superflous—should be "Having something in the shape of a queen."

Line 8, from the bottom, the word *six* should be *three*.

And on next page. in line 25 from the bottom, occurs the ludicrous blunder of substituting "*cheese*" box for "*close*" box! Did the compositor serve on one of the Monitors?

A. I. Root.

Medina, Ohio.

For the American Bee Journal.

Mr. W. A. Flanders, in his April excursion thro' the United States, B. J., Page 190, Volume Second, among other memorable feats of animalcular dynamics humbly condescended to ask the "Knowing Ones" a series of questions which they have hitherto been unable to answer satisfactorily to myself and other learned *apiculturians.* After much hesitation, lest I should betray my ignorance in experimental science, I must at last confess that I have "to give it up," kindly beseeching the Professor to publish the solutions to his apiarian problems, as also to the following puzzle, which I know he can *dissolve* to the entire satisfaction of the bee-keeping public.

A nucleus of bees having been abandoned to their supposed destruction on the 11th day of July, on account of repeated robbing and consequent total want of food and forage, on examination was found minus queen cells, brood and eggs. There was nothing visible in the combs but a very few cells containing pollen. On the 20th day of the same month a half finished queen cell was discovered, apparently entirely dried up within, and of eggs or honey not a trace. On the 6th day of August a small, though perfectly formed Italian queen was found *laying*, as also several cells containing honey.

Query 1st. Supposing an egg to have escaped notice, might it not have retained vitality enough from the eleventh to the seventeenth of July, when I suppose the queen cell may have been commenced, and the egg manipulated upon?

Query 2d. Supposing the above hypothesis to be erroneous, where did the bees obtain the egg that ultimately hatched into a perfect queen?

Query 3d. How did the bees perfect the cell and queen without any visible subsistence in the field or hive, except the few cells of pollen above mentioned?

Query 4th. My bees being all blacks, having repeatedly failed at Italianizing them, and no Italians nearer than Prof. Varro's of Washington Co., Pa., a distance of at least nine miles from here, could the bees have obtained this egg at such a distance from where it was transformed into a queen?

Now, will not Prof. W. A. Flanders, or some other "knowing one" *dissolve* this problem and greatly oblige,

Prof. A. P. A. Alsatius, A. M.,
Corresponding Secretary of Coon Island Golden Apiary, 2½ miles from shore.

West End, Aug. 6th, 1867.

☞ Send us the names of bee-keepers, with their Post Office address.

[For the American Bee Journal]

Straight Combs.

"Always straight combs has never been and never will be true in practice, except guide frames are used."—Bee Journal Vol. 3, page 28. Reply to Querist.

Place a swarm in a movable comb hive; examine when they start combs. Have a table knife ready, if a low hive is used; or a painter's knife if it is a tall hive; or lift the frames. Bend the combs in place, even to the cutting out and fastening again by melting the edges over a lamp or candle. If one side is extended at the expense of the next nearest comb, use the knife. Press the combs from the side and bottom upwards; that is, cap the combs, as that gives the bees a pattern. If extended too much to cap, cut it off over a dish, or if a tight-bottomed hive is used, elevate the front as in feeding, so that the honey will stay in till the bees gather it up again; then replace the hive. The knife will cause the bees to build their combs as straight as a board, if practically used. Three visits have been enough for most of my hives this year. I have straightened fifty hives a day, besides cutting out and grafting queen cells in other hives, and building up several nuclei a day. It will be seen, or can be, that the combs are made straight; and this can always be at the option of the beekeeper.

I have seen the combs in fifty hives of a neighbor, as straight and of as uniform a thickness as a pile of boards cut from a log. Will this neighbor please give the Journal his experience with straight combs, as he has an entire apiary ot that description?

James M. Marvin.

St. Charles, Ills.

☞ Our correspondent's "neighbor" will much oblige us, and greatly benefit a large number of beekeepers just introducing movable comb hives in their apiaries, by furnishing us with a detailed account of the means used to secure straight combs, and which have proved so signally successful.

Surplus Honey.

I have taken honey from a swarm of Italian bees which threw off a swarm June 1st—as follows: June 16th thirteen pounds; June 20th five pounds; July 5th two upper cones thirty-eight pounds; July 5th eight frames fifty-five pounds—making in all, from June 1st to July 5th, one hundred and eleven pounds. I have left fourteen frames in the lower box untouched, which are capable of holding seven pounds of honey each, but the greater part are filled with brood, and probably do not contain more than from thirty-five to forty pounds of honey. They have gone to work in good earnest to repair their loss, with almost half the honey season left, and many beekeepers think the buckwheat season the best in the year.

Correspondent Tiffin Tribune.

Honey.

The saccharine juice of plants, collected by bees from flowers, and deposited by them in the waxen cells of the comb in the hive, is called honey. These juices undergo some modification in the honey-bag of the bee; but, though their chemical character is somewhat changed, they still retain the flavor and to some extent the peculiar properties of the plants from which they were collected. Under a powerful microscope the pollen that was mixed with the juices may be detected in the honey, and even referred to the particular kind of plant to which it belonged. The prevalence of certain varieties may determine what sort of localities—gardens, woods or mountains—have been most frequented by the bees. Flowers of sweet perfume impart an agreeable odor and flavor to the honey; so that the product of some districts is famed and prized, while the bees of others, drawing upon very different sources, give to the honey they gather the disagreeable and even dangerous properties of the plants themselves. Thus the honey of Mount Ida in Crete, has always been held in highest estimation, as also that of Narbonne and Chamouni; but the honey of Trebizond causes headache and vomiting, and possesses poisonous properties supposed to be derived from the rhododendron *Azalea Pontica*. Xenophon, in his "Anabasis," notices his soldiers being poisoned by eating such honey. Cases of the same character are recorded in the "New Jersey Medical Reporter," November, 1852.

The substances recognized in honey are grape, sugar, manna, gum mucilage, extractive, a little wax, pollen, acid, and odoriferous substances. When allowed to drain from the comb it is wholly fluid, and this, as well as the superior quality first made in the season, and deposited in the upper part of the hives is known as virgin honey. But as ordinarily pressed out it holds a solid crystaline sugar, which may be separated by draining and pressing the fluid portion through a linen bag. The sugar is believed to be identical with grape sugar; but except its consistency and tendency to chrystallize, it is not apparently different from the fluid honey. Their taste and chemical properties are the same. The proportion of crystallizable sugar increases with the age of the honey, so as to give it in time a granular character. The consistency of honey is thus very variable. The best and newest of the spring season is a clear fluid contained in a white comb. Older honey is yellowish and reddish. It is freely dissolved in cold water, and in this condition honey undergoes the vinous fermentation. Various substances are fraudulently introduced into honey, to add to its weight and improve its color. The presence of such matter may be detected by dissolving some of the honey in warm water, and letting the mixture stand for the deposite to fall. The different sugars are also used as adulterants, the presence of all which may be detected either by microscopic observations directed to the forms and comparative sizes of the crystals, or to the presence of the sugar acari, or by the chemical tests also cited with the others by Dr. Hassall in his work "Adulterations Detected." Starch sugar, possessing the same chemical properties as the sugar of honey cannot be detected; but being often accompanied by sulphate of lime resulting from the materials used in its preparation, the presence of this is an indication of adulteration with starch sugar.

From the remotest times honey has been employed as an article of food; and to the ancients, in the absence of sugar, it was of greater importance than to the moderns. A land flowing with milk and honey, was to them a region abounding with the chief necessaries of life. As an article of diet and of medicine, honey possesses the properties of sugar, but is perhaps more laxative. Many constitutions, especially those subject to dyspepsia, cannot resist its disordering tendency; but those accustomed to its use find it wholesome and agreeable, In medicine its use is principally as a vehicle for other more active substances; but its composition and action upon all constitutions being somewhat uncertain, a solution of pure sugar is generally preferred for this purpose. When in combination with vinegar, the preparations are called oxymels. Honey is easily clarified by heating it in a water bath till it becomes so fluid as to be easily strained through flannel. The wax and lighter impurities may be removed by skimming, while the heavier substances sink to the bottom.

[For the American Bee Journal.]

"He leaps from the bath—rushes into the streets of Syracuse, *exclaiming Eureka! Eureka!*"

Mr. Editor:—The ecstacies of our beloved brother correspondent, Wm. A. Bennett, another Syracusan Philosopher on the mechanical arts—Page 17, Volume Third, American Bee Journal, forcibly strikes our susceptible imagination as bestowed upon an object equally desirable and useful with the crown of Hiero, to wit: A Home for the Honey Bee clearly pre-eminent, as invented by Mr. T. R. Allen.

Believing, as we do, Mr. B's description of the hive in question to be correct, we at the same time say that he has never seen the invention of Mr. T. S. Underhill; and speaking from experience, that hives of this description are, in our humble opinion, vastly inferior to simple boxes, top and bottomless, from which the frames are lifted out from the top, the persistent denials of interested parties to the contrary notwithstanding.

Mr. Allen has certainly chosen a very inappropriate name (Home) for his hives; for in a real home there should be committed no wilful murder, and were it for this advantage alone, the Langstroth hive would "claim as we think with justice, a clear pre-eminence" over any and every hive with which we are acquainted, our own not excepted.

As the bees cannot by any known means be driven out of the way on the further side of the comb when introduced into the hive laterally, but instinctively mean to hasten from danger to that very side as soon as brought in contact with the hive, the danger of murdering scores of bees at one operation, when the frames are filled with honey at top, is greatly increased, and bees of the common kind greatly infuriated, whereas for Italians whose tenacity to the comb has become, as it were, proverbial, certain death to them is inevitable.

Do you say that the "frame work and frames (best made of cast iron)" with its bevels or hinges or sacks or racks or what nots, constitute the superiority of this hive? We would respectfully inform you that this superiority of cast iron over wood, is as yet entirely problematic, and that frames properly constructed and not more than ten or eleven inches in depth will always be found to hang true upon the rabbets, when the hive is placed level, as it invariably should be. A greater depth of comb than this is neither desirable, nor in any way profitable to the bees or their owner, when the hive is at least eighteen inches from front to rear, containing at least nine frames for Italians, or eight for the common bee.

The expert bee-keeper, who understands how to secure straight combs always, needs moreover *nothing* to space the distances between the frames, and this very *nothing* likewise saves thousands of busy workers during the spring and summer months, always supposing that they are handled as they should be; and, if they are not meant to be thus handled, the common cottage hive is more desirable than any patent that has yet been brought to light, unless it be the simplest, and therefore "most perfect" patent hive—the Langstroth hive. By expressing our sincere conviction that this hive, as described by Mr. Bennett, will never become popular, we do not wish to detract from any of its supposed merits over others, and sincerely trust that *perfection has already been reached.*

And now, my very dear and indulgent readers, if what I have said should in any way give offense to Mr. A. or B. or C., or any other alphabetical gentleman, the columns of our beloved BEE JOURNAL, are, I suppose, alike open to its numerous intelligent and progressive subscribers, and if Mr. B claims the right publicly to exclaim *Eureka*! with his Syracusan Brother Archimedes, I trust he will not begrudge me the pleasure of privately thinking with Cicero, *Nihil tam absurde dici potest, quod non dicatur ab aliquo philosophorum.* F. VARRO.

N. B.—No hives on sale.

Delayed Fecundation.

A QUEEN BECOMES FERTILE AFTER SHE IS FORTY-ONE DAYS OLD.

On the first of April I brought out the bees I had kept under ground since the first of November. Next morning I examined a number of hives, and found several dead young queens before one of them. On examination I found that the bees had reared a young queen. I examined this hive repeatedly for eggs, but could see none till the 19th of May, when I found a great number and likewise a few very small larvæ at the bottom of some of the cells. On the 29th of May I made another examination, and found a good deal of sealed worker-brood, with some little drone-brood interspersed. I never yet knew a queen become fertile after so long delay as this. They would usually commence laying drone eggs after the twenty-first day from their hatching time, if that was in warm summer weather. A. GRIMM.

JEFFERSON, WISCONSIN.

[For the American Bee Journal.]

A New Way to Italianize a Colony of Native Bees.

At one time last summer, I had so many sealed queen cells ready to hatch, that I found it difficult to find places for them, as all my nuclei had either cells or queens, and some of the latter just commencing to lay. Being aware that the worker bees usually destroy a queen cell, if introduced before the lapse of twenty-four hours after the removal of their queen, I concluded to try a different way. I caged the fertile queens in a number of nuclei, letting them remain with their little colonies. I then inserted a queen cell into one of the combs in each of these nuclei; and I must say contrary to my expectation, every queen cell hatched, and the young queen as well as the old one, was nursed by the bees. In some of the nuclei, both queens were left in, till the younger one had also become fertile.

This success gave me the idea of trying the same process with full-sized half-breed colonies. I simply caged the queen and immediately inserted a queen cell that would hatch within twenty-four hours. When hatched, I waited till the young queen commenced laying, and then killed the bastard old queen—running the risk of having the young queen turn out a half-bred also.

This is a very safe way of changing queens, and less damaging to the old stock, than when the queen is taken away, and after the lapse of nine days the combs cleared of queen cells, and the queen then introduced. But if the bee-keeper does not wish to lose the eggs which his old queen would lay during the nine days (before the lapse of which no young queen ever commenced laying with me,) he may cage his young queen for about a week, and liberate the old one; and after the lapse of another week, cage the old queen again and liberate the young one—waiting till the latter becomes fertile, before the old one is removed.

Some bee-keepers may think it too much trouble to do so much caging and liberating; but I shall leave it to those who try it, to say whether they would prefer to do as I advise and do, or to insert queen cells in a nucleus and wait till the queen becomes fertile, rather than cage her and introduce her into another stock from which the queen has been removed.

A. GRIMM.

JEFFERSON, WISCONSIN.

THE AMERICAN BEE JOURNAL.

WASHINGTON, SEPTEMBER, 1867.

☞ THE AMERICAN BEE JOURNAL is now published monthly, in the City of Washington, (D. C.,) at $2 per annum. All communications should be addressed to the Editor, at that place.

To Subscribers in Canada.

MR. JOHN H. THOMAS, of Brooklin, Canada West, will act as the authorized agent of the AMERICAN BEE JOURNAL in Canada and the British provinces. Remittances to him on our account, will be duly acknowledged.

☞ Mr. Adam Grimm, of Jefferson, Wisconsin, sailed from New York on the 17th instant for Europe. He expects to return about the middle of October, and to bring with him one hundred Italian queen bees from the apiaries of Professor Mona, at Faido, in the Canton of Tessin. He sent an order in advance for these queens, and has the assurance of Prof. Mona that they will be ready for delivery to him on the fifteenth of September.

This importation will be mainly for Mr. Grimm's own apiaries, in Wisconsin, though, if successful in getting them in, about fifty of the queens will be for sale, and will be sent by express to those ordering them, immediately on his arrival at New York. Bee-keepers desiring to procure imported tested queens should avail themselves of the opportunity thus presented. *See Advertisement.*

A correspondent informs us that there is little to be found at the Paris Exposition, that would interest a bee-keeper. In one place he saw about twenty straw hives arranged for show, all empty save two, which contained Italian bees. In another place there was a miscellaneous collection of hives and implements—nothing novel among the former and scarcely anything useful among the latter. The bee-keepers of Germany and Switzerland had not sent a single article to the exhibition; and if what was there set out for show, be a fair expression of the present state of bee-culture in France, there is yet ample room for improvement therein in that country.

☞ SEVERAL communications intended for this number of the BEE JOURNAL, were received too late for insertion.

Correspondence.

TONICA, (ILLS.,) August, 12.

The August number of the BEE JOURNAL came to hand, but the July number I have not had the pleasure of seeing. I say *pleasure*, because it is such to me, and I do not see how it can be otherwise to any person who takes any interest in the culture of bees.

I commenced with bees a few years ago, purely for diversion; but the more experience I have, the more I read and learn in regard to their history, &c., the more I am inclined to the belief that it can be made lucrative, as well as a source of pleasure, to keep bees and to keep "lots" of them—the more the better.

I have always (until quite recently) thought that a locality could easily be overstocked; and have regarded this as the source of so much ill luck. But I find, after reading the BEE JOURNAL for a short time, that I was laboring under a serious mistake; and should have known better had I stopped to reason the matter. The fact is, the honey harvest is of short duration, comparatively speaking, and when "'tis" in season there is enough for all, but when there is none to be had none can be got. I now believe that it would be a rare case to find a section of country where the number of stocks kept, has any influence on the quantity of honey gathered by any one.

I would like to inquire of some of your correspondents, the best and most simple plan to unite bees in the fall. A plan that can be practiced by a novice, with no risk of the bees quarrelling. E. H. MILLER.

SUBLETTE, (ILLS.,) August 12.

Enclosed please find two dollars, for which continue my subscription for your valuable paper, which I heartily recommend to all interested in the culture of the bee.

JOHN VANDEWORT.

WEST SPRINGFIELD, (MASS.) August 14.

Enclosed please find two dollars to renew subscription of the BEE JOURNAL. Of all the publications I receive (seven in number,) *none* is more *heartily* welcomed than the JOURNAL. "Long may it wave."

The season of 1866 was the most unfavorable for bees in this section for *very many* years; and what stocks survived the winter were very feeble. The spring of 1867 was one of the best seasons I ever knew and bees have done finely. I have had several "virgin swarms"—five swarms issued the 7th, 8th, and 10th of this month; and as buck-wheat is yielding honey in abundance, these have nearly filled their hives with comb, and stored considerable honey. Such swarms are *very rare* in this section. Bee-keeping is in a low condition in these parts—few persons taking any interest in it.

N. T. SMITH.

STERLING, (ILL.,) 8 mo., 16th.

Being very anxious for the success of the BEE JOURNAL, and the continuance of its publication; and believing that nothing would conduce so materially to that desired success, as an increase in the subscription list, I forward a small one.

There are quite a number of bee-keepers in this neighborhood, and a rapidly growing interest in the management of bees; and believing, as I do, that the Bee Journal is just what they want to excite that interest, and give them the information necessary for the successful management of bees, I see no reason why the Journal may not have a reasonable support from this part of Illinois, I shall endeavor to obtain it. D. C. Hunt.

Hamilton, (Ill.,) August 12.

I have wintered nine hives last winter in the ground, from October 21, till March 16. I did not find ten dead bees per hive. They consumed very little honey, and were all in good condition, without dysentery.

C. Dadant.

Appanoose, (Ill.,) August 1.

I have been disappointed repeatedly from bees destroying queen cells, or deserting them or eggs in small boxes, even when they had been kept in the cellar two days. Will some person please inform the readers of the Bee Journal how to overcome this difficulty.

S. C. Wilson.

Lebanon, (Ill.,) August 1.

I trust you will receive sufficient encouragement to induce you to continue the publication of the Bee Journal. I have been greatly profited by it. F. O. Blair.

Bloomfield, (Ontario,) 7 mo., 29th.

In answer to "Apis," page 12, Volume 3, plane the top and sides of the top bar of frame; use guide combs; and restrict the space between the frames and honey board to five-sixteenths of an inch. This will generally ensure straight combs, and clear spaces above frames. The comb used for guides should be worker brood comb of the previous year's construction, which will all be of one thickness, and will usually prevent the "uneven thickness" of the cards of comb, so often met with in hives using artificial guides. G. H. Bowerman.

Annawan, (Ill.,) August 16.

Mr. Editor;—It has been extremely dry here for so long a time, that bees are doing comparatively nothing; and unless we have rain soon, I shall be obliged to feed my bees this fall. It therefore interests me very much to be prepared for winter.

Would the following plan be a good one for wintering bees?

A. Make a box or frame two feet high and twelve feet square. Set it on the ground; then dig out a hole eleven feet by eleven, and three feet deep, throwing the dirt around the box or frame, to run off surface water. Then stand a post at each end, lay on a pole for a ridge, and poles for rafters, letting these latter rest on the box. Now cover the whole with prairie hay to the thickness of one foot.

B. If this arrangement would answer how many hives could be placed with safety in such a cellar? W. T.

☞ Will some of our correspondents, who have experience in wintering bees in cellars or clamps, reply to these inquiries?

[For the Bee Journal.]

I wish to ask the bee-men and women, through *our* Journal, two questions:

First.—Will there generally be a noticeable difference in the markings of workers—from mothers, one of which is a pure Italian queen but mated with a common drone, the other a common queen mated with an Italian drone? My observations leads me to think that those from the common queen will have the poorer markings.

It is well known that Langstroth, in his Circular for 1866, claims as the first or primary excellence of Italian bees "that they gather freely from the second or seed crop of red clover." I had for one season bees from a queen procured from Mr. Langstroth, not one of which was ever seen on red clover. Hence,

Second.—Has any one not raising queens for sale, ever had *bees to work freely on red clover*?

I wish also to notice an erroneous impression made by an article in the July number of the Journal. In Mr. Bennet's article on Allen's patent hive, in speaking of its movable outside, he says—

"On all other hives, this is a permanent part of the hive, except indeed the top or cover."

Now the American bee-hive *has* one movable side capable of easy removal, which I think bee-keepers will find as good as, and much less expense than *four*.

He says further, in speaking of the frames, that "the frames are securely fixed at proper equal distances from each other." So they are in the hive mentioned above, and no iron about them. Mr. Allen's is probably a good hive, but "Honor to whom honor."

J. L. McCune.

Ipava, Ill. Aug. 1867.

☞ Movable sides or ends are no new feature in hives. The Dzierzon, the Berlepsch, and the Œttel hives are thus constructed; and until recently this was the case with *all* German and French movable comb hives, and the combs or frames could only be moved horizontally. Of late, side opening hives are regarded with less favor, and those having a vertical movement of the combs or frames are being introduced there.

Adjusting the frames firmly at equal distances from each other is a decidedly objectionable plan, and certainly a retrograde movement in bee-culture. It was used, fully tested, and abandoned years ago. [Ed.

[Translated for the Bee Journal.

Six Theses on Bee-Culture.

1. Bee-culture is not properly or scientifically advanced by restricting ourselves to breeding, in its purity, any one natural race or variety, however valuable it may be in itself, and though its good qualities be not overrated.

2. The ultimate aim of a truly rational bee-culture should be to produce, breed, and establish an *improved* race or variety. This may be done by availing ourselves of the tendency to variation observable in the natural races; and giving them such direction as will conduce to combine and perpetuate valuable traits, qualities, or characteristics.

3. In making selections for breeding purposes, we should not permit ourselves to be governed or guided exclusively by any prejudices or prepossessions existing in our minds or those of others, in favor of the supposed superiority of any existing natural race or variety, nor by the fine exterior appearance of any individual bee, but solely by an unbiassed appreciation of its productive qualities.

4. We should hence reject all rules and principles of breeding designed simply to secure mere purity of race, or the unadulterated perpetuation of any particular variety.

5. Hence, also, we should not foster an exclusive attachment to or preference for any one of the existing natural varieties of the honey bee, such as has hitherto circumscribed the efforts of the more intelligent apiarians, kept them moving in a wrong direction, and prevented them from making any advance towards that most desirable object—the origination and establishment of an improved race or variety.

6. Aware, now, of these facts and of the mistake committed, let the subject be taken in hand anew by those who perceive and appreciate its importance; and by applying the principles of scientific breeding which led to such astonishing results in other branches of rural economy, a similar triumphant result may possibly be achieved in the rearing of bees.

Postscript.—The foregoing theses were accompanied by the following note:—

"Enclosed I send an article, respecting the the publication of which you will decide. There is nothing new in what I thus desire to say to bee-culturists; but it is certainly high time that the principles of breeding which have long since been established and so advantageously pursued in the case of domestic animals, should also be applied to bee-culture.

It has always seemed to me inexplicable that the splendid results attained by English cattle-breeders, as well as the teachings of Nathusius, Ruff, and others in Germany, could be so utterly unheeded by bee-culturists, and that, in view of the constant activity manifested on every hand by breeders of cattle, sheep, and swine, there should be no real *bee-breeders* found anywhere. Is it not surpassing strange, in these circumstances, that those who raise bees, should confine themselves to simply multiplying stock, pertinaciously adhering to the *one idea* that success in their pursuit is to be attained solely by anxious efforts to secure purity of breed or race? It certainly cannot be alleged that the principles of breeding relied on in the case of beasts and birds are wholly inapplicable to bees; that the tendencies to variation are less in bees than in other creatures; or that breeding for the quality of productiveness encounters greater difficulty in them than in other domestic animals. Why, indeed, should there be greater or more insupeerable difficulties met with in bee-culture, when breeding for productive qualities than for external markings or mere physical conformation?"

A. Patzshke.

For the American Bee Journal.

Mr. Editor:—The German in New York city who advertises gloves for sale, for gentlemen, of bucks-leather—The Yankee who lost the umbrella belonging to a lady, made of silk —Mr. Quinby's pupil who put up a wren box by thrusting a pole into the cavity of a head that formerly contained the brains,—and the correspondent to the Bee Journal, who informs your readers that he has used *mullein stocks*, (instead of mullein tops) for bee-bobs, are supposed to be brothers by one father, whose understanding is perfectly *develed* up, and whose wife's *declinations* have always been *compiled* with his own and son's. His house, as described by Mrs. Partington, is situate upon a verdant *proclivity*, in the rear of which is located his *apilary* of a hundred bees. In front of it, (the house) there is a painted *Pizarro*—a pebbled *lemonade* all around it, and the water for the use of the family, comes rushing from *a never* flowing source of water through a gutta percha *anecdote*.

Jasper Honeysuckle.

Mullein Grove, August 25th, 1867.

P. S. My queens don't lay yet, for I do not find any egg shells before the hives. J. H.

[For the Bee Journal.]

North-Western Bee-Keepers' Association.

Are there to be any Bee-keeping Conventions this year? Could they not be made profitable? It seems to me that much good might result from them.

An effort is being made to have a Bee-keepers' Convention at Lyons, Iowa, at the time of the State Fair. The Fair will be held at that point, during the first week of October. The point is excellent for a large attendance of bee-keepers from both sides of the Mississippi.

Correspondence is being had with many prominent bee-keepers throughout the West, and those heard from so far, are decidedly in favor of the Convention, promising attendance and participation in the discussions. They are all practical and intelligent bee-keepers, and enough will unquestionably be present, to make the discussions interesting and profitable. This is not to be a *State* convention, but a permanent organization of the bee-keepers of the great North-West. The design is to have semi-annual gatherings, if possible, at the most advantageous points. But if they cannot be had so often, then we shall have to be content with one Convention each year.

M. M. Baldridge.

St. Charles, (Ill.)

[For the American Bee Journal.]

Bee-Hives.

Mr. Editor:—We are using here, in Essex county, (Mass.) a bee-hive which we consider as near perfect as any ever made. We have tested them for two seasons, and all who are using them are of the same opinion, and think no hive ever made comes so near perfection. These hives are made double with a dead air space of one inch between the outside and the inside hive. We use Langstroth frames in them.

When put into winter quarters, the honey-board is removed and a box three inches deep, fourteen inches wide, and twenty inches long (inside), filled with dry corn cobs, is placed directly over the frames. This makes a good winter passage, for the bees to pass from comb to comb, and the bees can be found at almost any time during the winter, clustered snug to the cobs Then we make other winter passages through the combs, by boring a hole through the side of the hive, and slowly worming a stick three-fourths of an inch square through each comb to the opposite side of the hive.

Holes should be made in each end of the cap, one inch in diameter, to let off what little steam passes up through the cobs. The cobs will keep in the heat and keep out the cold. Bees wintered in this kind of hive, and in this way, will consume less honey; few bees will die; and the combs will come out in the spring as clean and as dry, and free from mould, as they were the day they were made.

Let any one who doubts my statement, try it for himself, and he will not thereafter put bees in any other kind of hive; and he will say as others say, who are using them, that perfection has been reached in bee-keeping, so far as bee hives are concerned.

Has any one of the readers of the Journal tried my plan for introducing Italian queens, as given in the May number of the journal? If so I would be pleased to hear the result through the pages of the Journal I have introduced queens to black colonies, with tobacco smoke, in less than twenty minutes time, and had to drive the black one out of an old box at that. If any of the readers of the Bee Journal have a better or safer way, for giving colonies of bees Italian queens, I should like to know how it is done; and I hope they will lose no time in giving it to the Journal.

A bee-keeper in Wenham wintered fifty-one (51) colonies. He now has eighty-three(83,) and a ton of surplus honey. Who can beat this?

He had twelve (12) colonies in the double hives alluded to. All of them swarmed, and made at least fifty pounds of surplus honey each; and some of them a much larger amount. In future he will put bees into no other hive, as he considers this as good as he wants.

Henry Alley.

Wenham Mass. Aug 12, 1867.

☞ **Send us the names of bee-keepers, with their Post Office address.**

[For the American Bee Journal.]

Purity of Italian Queens.

I see in the last Journals communications rom A. Grimm and Mrs. E. S. Tupper, with reference to the purity of Italian queens.

I have been engaged in rearing Italian bees for five years, and have purchased queens from quite a number of different parties, most of them of unquestionable integrity, some of them importers; have received queens of good bright colors, tested, and guarantied; have Italianized my apiary thoroughly two years since; and have exercised great care in breeding.

I have reared about two hundred queens that were fertilized, making it a rule to destroy at sight all queens of questionable color or purity, and must say if Mrs. Tupper, or any body else, can furnish queens that will, from first of May throughout the season, produce eggs from which *invariably* bright queens can be reared without a single instance of a darker shade than the mother, I should like to obtain one.

From the best queen I have bred from, which I have had three years, I have her royal daughters down to the fifth generation, the progeny of which I can handle without scarce a bee leaving the comb, and both mother and progeny are specimens of rare beauty in color. This same queen, as well as her maternal ancestors back to her g. g. grandmother, all produce a majority of bright queens; but a few of them, especially when there was cold unpleasant weather and a scarcity of forage, would vary in shade decidedly from their mother. As far as my experience goes, the weather makes a difference; and I find that this is the opinion of most of the apiarians of the country.

I fully agree with her, however, that hybrids from pure mothers, are fully as profitable as storers of honey, as the full bloods. The best yields of honey have almost invariably been from those stocks whose workers I considered impure; and I have a case that illustrates this. Last year I transferred six swarms of bees for a man in a neighboring town, and introduced two queens, and made two artificial swarms in June. He then reared queens that met common drones, and introduced them into the remaining six swarms, so that he had eight stocks in the fall. These came out in good condition this spring, and the profits from those eight stocks this year, are seven fine swarms, and over five hundred pounds of nice box honey. D. C. Hunt.

North Tunbridge, Vt., Aug. 5th.

Gnadenhütten, (O.) July 26,

Yesterday I sold my honey crop of this summer, and while I am realizing some money from my bee business, I remember, the editor of the Bee Journal. Enclosed you will find two dollars, as my subscription for the 3d volume. The bee business was good with us this summer, both for honey and swarms. We had regular rains, and plenty of white clover, which is our main reliance for honey.

Yours,

Samuel Tuetli.

AMERICAN BEE JOURNAL.

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Wax.

This is an organic product of both animal and vegetable origin, and occurring even as a mineral; though in this case also, its original source is undoubtedly vegetable. The common properties of the substances included under this name are fusibility at a moderate heat; burning with much flame; insolubility in water, and solubility in alkaline solutions, alcohol, and ether; and in most cases a peculiar lustre, to which the name of "waxy" has been given. The most important of these substances is bees-wax, which was for a long time supposed to be simply collected by the bees from flowers, but has been proved by the experiments of Huber and the Hunters, to be secreted by them. It is obtained in the cakes in which it appears in commerce, by boiling the comb from which the honey has been drained or pressed out in water, with frequent stirring, that the wax may not burn. When completely melted, the wax is strained by pressure through hair bags, and received in a vessel of cold water, which serves to cool it and prevent it from sticking. This is repeated two or three times, the bags increasing in fineness, and the wax is finally melted without water, and poured into moulds wider at the top than at the bottom, and wetted to prevent sticking. After being filled the moulds are kept in a warm room till the wax has solidified, as otherwise the cakes are apt to crack in the middle. This process is however tedious and somewhat wasteful, and various attempts have been made to find a more expeditious one, of which Mr. Bagster's appears the most simple. The combs are placed in a conical earthen vessel filled with a mixture of one ounce of nitric acid to a quart of water. This is set over an open fire till the wax is completely melted, when it is removed from the fire and allowed to cool gradually. The product becomes divided into three layers, the upper one pure wax, the lowest chiefly impurities, and the middle containing sufficient wax to be worth adding to the next melting. A marketable wax is thus obtained at a single operation, without straining or pressing. Bees-wax obtained by either of these processes is yellow; has an agreeable, somewhat aromatic odor, and a slight but peculiar taste; is rather soft and unctious, though firm; has a granular fracture, but when cut shows the characteristic waxy lustre; does not adhere to the fingers, or to the teeth when chewed; is rendered soft and tenacious by a moderate heat; melts at about 142° F; and has a specific gravity of 0,960 to 0,965.

Wax is often adulterated with earth, meal, rosin, &c. The first two render it brittle and grayish, and may be detected and separated by melting the wax, when the impurities may be strained out. Rosin makes the fracture smooth and shining instead of granular, and may be dissolved in cold alcohol, while the wax remains untouched. Tallow or suet renders the wax softer, and gives it an unpleasant odor when melted.

Wax is bleached by causing it when melted, to pass through a perforated trough upon the surface of revolving wooden cylinders half immersed in water, by which it is formed into films, which are then placed on webs of canvas raised from the ground, and exposed to the action of the weather until perfectly white. It is, however, generally necessary to repeat the process so as to expose fresh surfaces before the wax can be completely bleached; and care must be taken to finally remove the wax from the webs of canvass only in dry weather, as if it is done in damp weather, it retains a grayish tint, which much impairs its value. The films are finally melted and cast into thin circular cakes, known commercially as "virgin wax." When bleached by means of chlorine or its compounds, the color is destroyed, but the wax is rendered unfit for many purposes, and especially for candles. Another method of bleaching is to add one pound of melted wax, two ounces pulverized nitrate of soda, and stir in by degrees a mixture of one ounce sulphuric acid and nine ounces of water. When all the acid is added, it is allowed to partially cool, and the vessel is then filled up with boiling water, to remove the sulphate of soda and acid; it is then quite white, translucent in thin slices, shining, harder and less unctuous than the yellow, without taste or smell; becomes soft enough to be kneaded at 85° to 95° F., and fuses at 150° to 155° F., though it will remain liquid at a somewhat lower temperature; by great heat it is partially volatilized and partly decomposed, the vapor burning with a clear bright flame; it is insoluble in water, but slightly soluble in boiling alcohol and ether, which deposite most of it on cooling; easily so in the essential and fixed oils; and can readily be combined with rosin by fusion. It is very frequently adulterated with spermaceti, which destroys its peculiar lustre and renders it softer and more fusible; it is also adulterated with stearine, which may be detected by the odor of fat or tallow evolved when the wax is highly heated, and by the crumbly texture which it imparts.

White wax is composed of two principal substances: myricine, which is grayish white without crystalline texture, fusible at 137° F., and almost insoluble in boiling alcohol; and cerine or cerotic acid, which crystalizes when pure, in delicate needle-like crystals, fuses at 172° F., is much more soluble, constitutes about twenty-two per cent. of the entire weight of the wax, and has for its formula C 54, H 54, O4. Wax also contains four or five per cent. of a substance called ceroleine, which is soft, very soluble in cold alcohol and ether, and melts at 83° F.; and by dry distillation, and by the action of acids and alkalies on cerene and myricine, a large number of peculiar organic compounds may be derived from it. A specimen of bees-wax from Ceylon was found by Mr. Brodie to consist almost exclusively of myricine.

Bees-wax, though produced in almost every country in the temperate and tropic zones, is an article of foreign commerce in comparatively few. The European supply is principally derived from the Baltic, the Levant, Africa, India, and the United States. The Portuguese province of Angola, in Africa, annually sends to Europe about 1,500,000 arrobas or 47,772,000 lbs. Japan also exports much. In the United States it has long been an important article of production and export. The census of 1840 gives the value of the product at $628,303, which would be about 2,000,000 lbs.; that for 1850 states the value of wax and honey to have been 14,853,790 lbs., worth $2,736,606; and that for 1860 gives 1,357,864 lbs. of wax alone. The exports in 1859–60 were 362,474 lbs., worth $131,803. In 1861, 238,553 lbs. were exported from New York. In 1860 more than five-sixths of the exports were to France, England and Brazil.

Besides bees-wax, two kinds of wax of animal origin enter into commerce. The first, the insect wax of China, is found coating the surface of the *Rhus succedaneum* and some other trees. It is the product of a very small white hemipterous insect (*Coccus Sinensis*,) which about the beginning of June climbs up the plant and feeds upon it, depositing the wax upon the branches as a coating which resembles hoar frost. This is scraped off towards the end of August, melted in boiling water, and strained through a cloth. It is white and crystalline, resembling spermaceti, but harder, more brittle, and more fibrous, fuses at 181° F., is but slightly soluble in alcohol or ether, dissolves readily in naptha, and has for its formula C 108, H 108, O 4. It does not contain cerotic acid ready formed, but by fusion with potash is decomposed into a mixture of it with a substance called cerotine (C 54, H 56, O 2.) The Chinese call it fe-la, and employ it for making candles sometimes alone, but more commonly mixed with softer fats and as a coating for other more easily fusible material, in order to prevent guttering. It is often colored red with alkanet root, or green with verdigris. It has been introduced into England for the manufacture of composite candles, and is found to answer the same purpose of bees-wax, of destroying the crystalline structure, or "breaking the grain" of stearic acid. In China it is also employed as a medicine. The French have introduced the insect into Algeria. The price of wax at Ningpo some years ago was 22 to 25 cents per pound, and the annual production was estimated at 400,000 lbs. Another wax of animal origin is the Andaquiss wax of South America, which is produced by a small insect called *avesa*. It melts at 171° F., has a specific gravity of 0,917, and according to M. Lewy contains fifty per cent. of ceroxyline or palm wax, forty-five per cent. of ceroxine or sugarcane wax, and five per cent. of an oily substance.

Of the vegetable waxes, the Japanese, the palm wax of New Granada, and the myrtle wax of the United States are the principal varieties. The first is as white as bleached bees-wax, more brittle, less ductile, and breaks with a smoother and more conchoidal fracture; its specific gravity is rather less; and its melting point is about 127° F. Its chemical composition is not definitely known. The berries yielding it grow in clusters like grapes on trees from fifteen to twenty-five feet high, and when gathered are roughly washed and boiled in water, when the wax rises to the surface, is skimmed off, and formed into cakes weighing about thirty pounds. It is said to require protracted bleaching before it is fit for the market. Small quantities have been shipped to Europe for many years past, but it is only within four or five years that it has been extensively employed for candles, &c. The amount exported is large and continually increasing. In 1859 a single cargo of 1,170,000 lbs. arrived in England. In 1860 the price at Nagasaki was $11 to $12 per pecul, or 8½ to 9¼ cents per pound. The palm wax of New Granada, (ceroxyline) is obtained from the *Ceroxylon andicola*. The scrapings from the exterior of the tree are boiled by the Indians, and the wax rises to the surface. It is grayish white when crude, and after purification by digestion in alcohol is yellowish white, almost insoluble in alcohol, and fuses at 161½° F. The tree has been introduced into Algeria. Carnauba wax is derived from a palm growing in northern Brazil. It is soluble in alcohol and ether, and fuses at 182° F. The ocuba wax of Brazil is derived from kernels of the fruit of several species of *myristica*, especially the M. ocuba. It is yellowish white, soluble in boiling alcohol, and melts at 98° F. The Bicuhiba wax, also from Brazil, comes from the *M. Bicuhiba*, is yellowish white, soluble in boiling alcohol, and fusible at 95° F. The myrtle wax, which for many years has been an article of commerce in the United States, also known as "candleberry wax" and as "bayberry tallow," occurs as an incrustation on the berries of the wax myrtle or bayberry. The berries are enclosed in bags of coarse cloth, and kept immersed in boiling water until the wax collects on the surface, which is then cast into moulds and sold without further preparation. It varies in color from grayish yellow to deep green, has a balsamic and slightly aromatic odor, a specific gravity of 1,004 to 1,006, fuses between 117° and 120° F., and is much harder and more brittle than bees-wax. It is composed, according to Mr. G. E. Moore, of one-fifth part of a substance called palmatine, which exists in palm oil, Japanese wax &c., and four-fifths of palmitic acid, with a small quantity of lauric acid. This wax appears as a candle-making material, to be worthy of more attention than it has hitherto received. Its illuminating power is scarcely inferior to that of the best bees-was; it hardly costs one quarter as much, can be obtained more free from color, is easily bleached, and from its superior hardness can be cast instead of being moulded by hand like bees-wax. The plant grows abundantly on the poorest soils along the coast of New England. Plantations of it have long existed in Europe, and its cultivation has lately been tried in Algeria. The berries of *myrica quercifolia*, natives of the Cape of Good Hope, growing on dry sandy plains along the coast, also yield a greenish wax, which can be bleached, and when made into candles gives a very good light. The sugar cane yields a wax called cerosine, which is soluble in boiling alcohol and slightly so in boiling ether. The sorghum also secretes on the surface of the native stalks a white resinous powder, from which candles could be made. A waxy substance called suberine has likewise been obtained from cork.

Several mineral substances resemble wax in physical properties, the principal of which are ozocerite and hatchettine. The principal use of the different kinds of wax are: 1. for the manufacture of candles, either from pure wax, the consumption of which is especially great in Roman Catholic countries, or of wax mixed with stearic acid, palm oil, &c., as in composite candles; to which purpose every variety, whether animal, vegetable, or mineral seems to have been applied in different countries; 2, as a vehicle for colors in certain kinds of painting, and as a protecting coating for them; 3, for giving a polish to furniture and floors, for both which purposes it is generally used in France and other parts of southern Europe; 4, in medicine, in which bees-wax is employed as an internal remedy against diarrhœa and dysentery, as an ingredient in almost all ointments, cerates and plasters, and also for filling carious teeth; 5, as a lute or cement of much utility for chemical and other purposes, and also as an impervious coating for vessels formed of porous materials; 6, as a material for modelling; and 7, formerly for seals instead of sealing wax.

☞ Send us the names of bee-keepers, with their Post Office address.

For the American Bee Journal.

MR. EDITOR:—In submitting the following practical experience in apiculture to you (and if thought by you worthy of a place in the JOURNAL, to the readers thereof,) I wish to be regarded as a mere "novice" in bee-culture. My sole object is, *first*, to communicate a few facts learned by practical experience during the present season; *secondly*, to tell how I learned these facts; and, *thirdly*, to invite comments by experienced apiarians.

First.—I learned the fact that a good colony of bees can be started and established by the use of a very small piece brood comb with eggs and young larvæ in it, two or three sheets of dry clean comb, and a quart or more of stranger worker bees. And, *second*,

That almost any number of young queens can be reared, by starting a few such colonies at the proper season of the year; and that artificial swarming can be successfully managed and carried to any desirable extent by this mode of management with reasonable care on the part of the apiarian.

I learned these facts by practical experience as follows:

On the 17th of April last, on examining one of my old colonies of bees, I found drone brood sealed or capped over; and I at once went to one of my neighbors, and by his permission and assistance, cut out of one of his Italian colonies a piece of brood comb about three by four inches square, with eggs and young larvæ in it. After taking it home, I divided it into two pieces, which I fastened into two sheets of dry comb—one piece of brood comb in each sheet of dry comb. Thus prepared, I placed them into two empty hives; and after putting in each hive two other dry sheets of comb, one on each side of the comb in which the brood had been inserted, I filled the remaining spaces in the hives with empty frames. Having them thus prepared, I removed two of my strongest colonies from their stands to other stands, and placed my empty hives prepared as before stated on the stands from which I had just removed those strong colonies. This was done about two o'clock in the afternoon of a warm day, when my bees were flying freely.

The result was that, after a few minutes confusion, the incoming bees took possession of the hives on their old stands, and after the first evening all seemed harmonious and happy.

On the 11th day thereafter, being the 28th of April, I opened these young colonies and found in one *two* and in the other *four* new and perfect queen cells, four of which I removed and used as a basis for other artificial colonies, and also started another colony with brood comb in the same manner as on the 17th. This reared five queens, which I used, as before, in starting artificial colonies.

In this manner I have started, and by supplying one or two that seemed weak with full brood combs after they had fertile queens, have made several good Italian colonies of bees. I have also secured colonies which, without an exception, have nice straight combs.

If any reader of this communication knows of any better or more certain way of rearing and keeping a supply of young queens on hand, and at the same time and by the same means increasing the number of colonies and securing uniform straight combs, I should be pleased to have the same made known to all "novices" in bee-culture. BELMONT.

[For the American Bee Journal.]

Bee-culture in Chili.

In Chili we have the Italian bees exclusively, the first importation having been made from Germany in 1852. They have increased so largely and rapidly, that the production of honey last year, in the single province of Santiago, exceeded 8000 cwt. The honey is peculiarly aromatic, speedily becomes hard and white as pure tallow, and sells at about six dollars per hundred weight. Immense fields of what is here called Alfalfa or Spanish clover, and elsewhere esparcette (*Onobrychis sativa*) cultivated for cattle food, furnishes the bees with inexhaustible pasturage, from which their hives are quickly filled with stores of honey and pollen. The annual yield already far exceeds the home demand, but no arrangements have yet been made to supply foreign markets.

It does not rain here during summer or about eight months of the year In the remaining four months the weather is changeable, alternating between sunshine and rain, with warm and humid air. These are our winter months, the thermometer then rarely sinks below 10° C; and the bees gather pollen and honey nearly all the time. Besides the alfalfa already mentioned, the bees forage on lucerne grass, the blossoms of nearly all the varieties of fruit trees cultivated in Europe, the almond trees especially, and innumerable alpine flowers and plants.

Our bees are not subject to any disease, with the sole exception of a kind of vertigo at some seasons. Foulbrood has never been known to affect any stocks. The largest apiaries are in the neighborhood of Santiago, where there are extensive orchards of apple, pear, peach, and fig trees; and five thousand hives in one collection, belonging to one proprietor, are not uncommon in this and other neighborhoods. The multiplication of stock is very rapid, as the production of brood is enormously great. The individual hives, however, are never unusually populous, as in consequence of the never-ceasing labors of the bees the year round, the average duration of life is brief. About thirty thousand hives are kept in a circuit of three or four miles around Santiago. My own apiary consists of 252 stocks in single and double hives, two pavilions containing 54 colonies, and seven outhouses with 96 hives each or 672 together—making an aggregate of 978 stocks. All these are protected by thatched roofs. I think I have the largest pavilion, and certainly the greatest number of Dzierzon hives in this country. A. TAUBE.

Feb. 5. 1867. *Apiarian.*

☞ SEND us the names of bee-keepers, with their Post Office address.

For the American Bee Journal.

A box hive sent out a swarm May 17th and a second swarm May 30th—That evening piping in both notes was distinctly heard in the hive.

On the 28th a large comb with much sealed brood and two queen cells, was taken from another hive for a purpose which failed. The next afternoon, after having lain out on a bench about 30 hours, worker brood was seen cutting out, and to save it the comb was placed on the top of the box hive, and covered with a glass box, first opening some of the communicating holes; a few dozen bees came up to take care of the comb, honey was deposited in some empty cells and a special guard set over the queen cells.

On the morning of the 31st, a well developed princess came up from the hive below, and remained in the upper glass box a couple of hours. She was in constant motion upon and under the comb, but shewed no disposition to approach the queen cells. But as she passed over the comb she frequently stopped where some hatching bee was striving to get out of its cell, pushed her long fore legs down into the cell and lifted out its struggling tenant. I saw this done in twenty instances. The workers paid no attention to the hatching bees. Soon after the senior princess came up, the workers began to bite open the mouth of one of the queen cells until there was an orifice large enough for her to come out. She could be seen moving in the cell, but was confined to it by the worker guard. Being called off for half an hour, I found that she had escaped from the cell, and was being chased round the floor of the box, bitten by the bees, and squealing loudly. Presently she ran under the comb followed by several workers. During this time the senior princess continued to move over the comb, paying no apparent attention to the younger princess, until after a little while she also went under the comb. For the ten minutes that I could remain neither of them came out. There was no piping heard that day, and the hive sent out no third swarm.

Have any of your correspondents who use observing hives ever seen the queen helping out the hatching bees? And why was there no piping heard in the hive when it contained two living princesses?

A correspondent in the July number mentions sticks of rotten wood as the best material for smoking bees. Not being able to use a cigar just now, I have a substitute which I find both the most efficient and convenient smoker. A piece of half worn cotton or linen goods about a foot square, is made into a tolerably tight roll and well tied or tacked in three or four places, when one end is fairly lighted, it will continue to burn until consumed, unless carefully put out. With this I open hives, take out frames and perform all usual operations without protection for hands or face. The material is plentiful in every house, the roll is made in a moment, lasts a long time, and is always ready.

RICHMOND, VA. TYRO.

[For the American Bee Journal.]

Experience of a Novice in Bee-Keeping

No. 7.

DEAR BEE JOURNAL:—I do not know how I can better interest your readers in this number than by answering at length a number of queries from a correspondent. He says:

"In perusing the BEE JOURNAL I observed your article written on bee-culture, and as I am a bee-keeper, and a sort of novice at that, I thought I would take the liberty of writing to you.

First.—The main question I wish to know is this: Do bees build combs *true* in the Langstroth hive? Some say that bees will not build combs true in any frame unless there is a piece of guide comb put in."

I have never used guide combs, and have never had a hive that I could not remove the combs from readily, although in one or two cases I have found it necessary to bend the combs slightly when they had started them a little off. And as I always swarm artificially, I usually give the new swarm two frames ready filled from the old stock, as a start.

In the improved form of the American hive, which I am using now, I have yet to learn of a failure in that respect, without any care whatever.

"*Second.*—What do you think of the Italians?"

I have thus far found them fully up to all that is claimed for them, with perhaps the single exception of red clover. It is true they are found on it to some extent, but in the last two seasons, one of which was very wet and this one very dry, I have not been able to discover any increase in weight of their hives while it was in bloom, and it is quite plenty about here.

"*Third.*—Do you think they can be kept to much advantage where the black bee exists in great numbers?

If you are going to allow your bees to swarm naturally, perhaps not. But if you practice artificial swarming (by far the most profitable way), I think I can show you clearly that there is no difficulty at all, although there is so much said and written to the contrary.

One person in particular, a Mr. T. B. Miner, editor of the Rural American, I think quite needlessly exposes his ignorance or something worse, by making the assertion that the Italian bees *cannot* be kept pure unless on an island or similar place, and that all who claim to the contrary have queens for sale and are cheats and swindlers.

To illustrate, we will suppose that a person gets a pure queen to start with, that there are a hundred or more black swarms in a circuit of a mile or two around him, and that he has a dozen or more hives of black bees himself. The first year he can easily supply them all with queens from the original stock, which cannot any of them be less than hybrid, equally as valuable as honey producers as the old queen. And so on, as long as she lives (three or four years), he can easily raise all his queens from her; and it would be very strange indeed if some of her progeny did not mate with Italian drones, and be prepared to take her place to furnish queens, as all the drones produced thus far must be pure Italians, besides coming out two or three weeks earlier than the common ones in the spring.

Simply bear in mind that *so long as we raise all our queens from one of known purity, we can have nothing more impure than hybrids*, and very soon a large proportion as pure as the original.

In my case I had three pure queens the first year, out of about eighteen raised; and one of them produced a progeny that, besides having the three bands fully marked, were even brighter colored than those from the original queen. And as my old queen was lost last winter, I selected this one, from which I have raised all my queens this year I think it even possible to raise one thousand queens from one pure one in a single year, if necessary.

Another fact: although we have black bees on all sides, some only a few rods away, I have not been able yet to find one whose queen had met any of my drones. At least the worker progeny does not show it; and it is my opinion that neither queens nor drones ordinarily go as far from the hive as the few cases we have heard of, when queens were raised at a season of the year when drones were very scarce.

The present year when we had drones in great number, the young queens made but few excursions, and were gone but a short time in being fertilized, in comparison with last year, when we had but few drones

"*Fourth.*—There is so much written about this one and that one having impure queens, &c., that I hardly know whether to purchase any or not. Langstroth says that all *pure* Italian workers show *three* distinct yellow bands, and Quinby says that they show only *one* when empty. Now, do your Italian bees show *three* yellow bands when empty, or do they show only *one*?"

My Italians assuredly show *three* yellow bands at all times; and not only the pure ones, but many of the hybrids also; so much so that I should call some of them pure were it not for their temper.

"*Fifth.*—Professor Varro thinks Quinby's stock improve, and Quinby says his stock of Italian bees is from Langstroth's. According to that neither had pure stock. For my part I hardly know where to get a pure Italian queen. What is your opinion as to where I can get the genuine Italian bee?"

I should advise you to send to Mr. Langstroth by all means. Not only that he is perfectly reliable and trustworthy in every respect, but that I think all bee-keepers should remember him with gratitude, as being the one who alone introduced movable frames and raised bee keeping from what it was a few years ago to its present advanced state. Let each one strive if possible not to have it said, as it has been many times before, that our great original inventors never receive the credit or benefit of their inventions. Who that has read Langstroth's writings can for a moment doubt his sincerity or his candor?

"*Sixth.*—I was on the point of sending this spring to W. A. Flanders for a queen, but I thought I would try some of his Bee-Charm first. I found it to be a genuine —— humbug! And his book *lied* to *me* in *several* instances. So I thought that if a man had such an avaricious disposition for money as to resort to such means to get it, and humbug the bee-keeping community on such a simple thing as that, he might be induced to humbug some one on Italian queens. Hence I passed him by as an impostor, and think I have a good reason for doing so. Don't you?"

Of course my correspondent had no idea of the above being in print; but it seems to me that the sooner the science of bee-keeping is divested of all the patent medicine humbuging quackery the better. It is subjecting us all to ridicule and derision.

"*Seventh.*—Well, how have your bees done this season? Did your Italians swarm any earlier than your black bees?"

As before mentioned, my bees were all swarmed artificially, with one exception; and as that one exception has a history of itself, we will reserve it for the next number.

With kind regards to all bee-keeping friends, I still remain, A NOVICE.

MEDINA, OHIO.

P. S.—In my article last month the first P. S. was intended as a question, and should have been "Will either interfere," &c., instead of "either will," &c.

[For the American Bee Journal.]

Wintering Bees.

I have been a bee-keeper for over forty years, and did think of giving my experience for the last eight, but it would make my communication too long. I will therefore confine myself to a short sketch on wintering bees.

If a man loses his bees in wintering, it is for want of knowledge, or neglect on his part. I lost four stands this spring, through my own carelessness. These are the only bees that I have lost in wintering for the last eight years. On the 18th of February (it being a fine day, and the snow gone,) I took my bees, now numbering fifty-seven stands, out of my bee-house. Having flown well through the day, I returned them to the bee-house at evening. Nine of the number being light, I set them by themselves. Four out of the nine were lost by my neglecting to give them honey in due time.

My bee-house for wintering is built of logs laid up double, with a space of about five inches between. This space is filled with dirt tightly packed in. The height is about six feet, but should be six feet and a half. Logs are laid across the top, and a little straw put on to keep the dirt from falling through, then covered with about six inches of dirt. The house stands lengthwise, north and south, with the door in the south end, and a hole in the north end down level with the floor, three feet wide and six inches deep. This hole and the door are left open until the floor is well frozen, which keeps the house dry, and the combs will not mould.

There are two air chambers sunk below the surface of the floor; one across through the middle, the other at the end. They are eighteen inches wide and three feet deep. These chambers are covered with lath, so that the air can come up freely. There is an inch tube running in on each side of the middle chamber, and one at the end of the end chamber. There are two chimneys, each six inches square.

I keep my hives well ventilated at the top, with the lower entrance closed.

There is no humbug about this matter, neither is there any patent right. ROBERT JONES.

CEDARVILLE, ILL.

The Carder Bee.

The insects popularly known as Carder Bees are so called because they prepare the materials for their nest in a manner similar to that which is employed in carding cotton, wool, or in heckling flax.

Several species of Carder Bees are known, all belonging to that familiar group of insects called humble-bees. Among these, as among humble-bees in general, there is a great variety of color, so that the same species has been called by different names, even by skilled entomologists. For example, in Kirby's admirable monograph of British bees, no less than seven varieties of the commonest species of Carder Bee (*Bombus muscorum*) are given as separate species.

That such mistakes should be made is no matter of surprise when we take into consideration the capriciousness with which the colors of this species are distributed among its members. Among the queen bees, the abdomen is sometimes marked with rings of yellow, black, and red, and is sometimes red at the base and tip and black in the middle. The worker has usually a yellowish abdomen with one or two blackish bands, but in some cases the whole abdomen is black, except a small patch on the base and another at the top. The male bee has generally the abdomen colored like the first mentioned example of the worker, but sometimes it is wholly black, and in many cases it is black except the tip, which is dun. Indeed, these insects are so extremely variable that the only method of determining their true arrangement is by taking a great number of nests, breeding the inmates, and subjecting them not only to careful examination, but also to dissection of their internal anatomy.

The specific title "muscorum," *i. e.* "of the mosses," which is given to this bee, is due to the material of which the nest is usually made. It was generally thought to be made exclusively of moss, but is, in fact, constructed of various substances according to locality. Mr. F. Smith mentions several instances where the bees had made use of very singular and unexpected materials. In one case bees were seen flying into a stable through the latticed window, collecting the little hairs that had fallen from the horses during the process of currying, making them up into bundles, and flying off with them. On being watched carefully, one of the bees was seen to alight on some grass not very far from the stable, and among the grass was found the nest, which was composed entirely of horsehair. Unfortunately this remarkable nest was destroyed before it was completed.

Another very interesting deviation from the usual economy of the moss-building bees was observed by Dr. William Bell. During the summer of 1854, a robin built its nest in the porch of his cottage at Putney. Some time after this had been observed, a humble-bee took possession of the nest and adapted it to her own purpose. He was unfortunately not able to identify the species by capturing a specimen, the nest having been destroyed; but Dr. Bell had seen the bee on one occasion and observed that it was black, with yellow bands, probably the *Bombus pratorum*.

Moss, however, is the favorite material of the Carder Bees, and wherever it can be obtained they will use no other substance, though in places where it is scarce, or not to be found, they employ leaves, grass, or any other suitable material. Whatever may be the material, the bee always takes great pains to disentangle the fibres in order to be able to weave them in a systematic manner in the nest. This process is conducted by means of the legs, the bee seizing the fibre with her fore feet, and passing it under her body by means of the remaining pairs of legs, forming it, as she does so, into a small bundle which can be easily carried off.

The object of the moss and other substances is very simple. The Carder Bees do not build their nests, like those of many humble-bees, beneath the surface of the ground, but upon it, choosing a spot where there is a slight hollow of an inch or two in depth. The moss is then woven so as to form a domed cover to the cells, this dome being of variable dimensions, according to the number of cells which it covers, but seldom reaching more than three or four inches in height above the ground. As in very rainy weather this mossy dome would not be water-proof, the insects line it with a very coarse, dark-colored wax, similar to that of which the breeding cells are made.

The entrance to the nest is always at the bottom, for although the insects will sometimes make an opening at the top, they seem to do so merely for the purpose of admitting air and warmth, and never enter or leave the nest through it, closing it at night or in rainy weather. Generally a kind of tunnel or arched entrance leads into the nest, like the passage into an Esquimaux snow-house, an edifice to which the moss-covered dome of the Carder Bee bears no small resemblance.

The best time to search for these bees is in the hay-making season, when the mowers often come upon them during their work, and a promise of some small reward will probably produce a tolerable harvest of nests.

SEND us the names of Bee-keepers, with their Post Office address.

[For the American Bee Journal.]

"Eureka! Eureka! Nihil," &c.

"Oh, blood and thunder! Oh, blood and wounds!

MR. EDITOR:—I notice in your issue for September an article in criticism of my remarks on Mr. Allen's hive. This is not the first time that would-be great men have quoted Greek and Latin to appear learned; nor the last that muddy intellects will try to cover their ignorance by using big words. What profound knowledge of the old Greek and Roman authors does this counterfeit Roman exhibit! How adroitly he lugs in their sayings upon other topics, to help him on the subject of bees! Well, plain English is good enough for me, and I will try and make him understand it.

He says "Home" is a very wrong name for Mr. Allen's hive, since it is so constructed as to kill scores of common bees and prove the inevitable death of the tenacious Italians. In fact the poor things cannot get out of the way, by going to the other side. The hive is a perfect death trap that must slaughter a part of one kind and the whole of another sort of bees having the misfortune to be put therein.

And all this in the face of the fact that I explained Mr. Allen's method to be especially calculated to prevent such an occurrence, by stating that the frames were withdrawn through the sides of the holder, thus directly taking away the contiguous sides of the comb from each other, or rather removing them further apart, though already sufficiently so when remaining stationery.

By the old method of lifting the frames directly out, bees are often killed* and honey cells torn open by abrasion of comb; but if ordinary care is used this cannot happen with Mr. Allen's hive. It takes a genius to thus misinterpret language and set reason and common sense at defiance. Such an one would see right through a mill stone, and prove by a mathematical demonstration that the moon is made of green cheese. I have seen Mr. Allen take out and replace all the frames of a "Home" well filled with Italian bees and honey, without crushing a single bee, or tearing open a cell. And he did it quickly and easily. No extra care was taken to avoid injuring the bees, though of course he might have destroyed many by setting the hive on fire or knocking it to pieces with an axe. But with common prudence he could not hurt the bees, since by his arrangement of frames, they not only have room enough to live securely, but also to work effectively.

The cast iron of which the frame holder is made troubles Varro.

My incidental allusion to the material best for making Mr. Allen's holder was not, as any body can see, the point I was making. Its design, arrangement, isolation from the outside, and application, were the things I set forth and commended. And a writer who thus quibbles, by putting an incidental for the main subject is either ignorant of the first principles of reasoning or deliberately misstates. Varro says that expert bee-keepers need nothing to space the frames, &c. But how if all bee-keepers should not be thus expert? All men are not born great men; nor do all who engage in the cultivation of bees at once overleap the stars, or reach at a single bound like this the very pinnacle of Bee-dom Most of us are common folks, and need some instruction to perform our work well. And not having this very learned and luminous savant always at hand to infallibly point out the right way, are fain to invoke other aid. And such aid is given in Mr. Allen's hive, by the due arrangement and security of the frames, which neither hang swinging and sliding about, nor kill the industrious denizens of the hive, either in being taken out or returned, by the rubbing together of their sides.

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* This does not occur when the operation is properly performed. ED.

But enough for the present. If I have failed to make myself understood by this very learned Professor, who I fear has pored over dead languages till he is blind to live facts, I at least hope to be intelligible to such as understand our mother tongue and use common sense in its interpretation.

Not Anonymous. Wm. A. Bennett.
Syracuse, Sept. 5. 1867.

Translated for the American Bee Journal.

The Carpenter Bee.

The splendid South African insect, the Carpenter Bee (*Xylocopa Capensis*) is a wood-borer of great power. She sets about her work in a curiously systematic manner, each action being exactly calculated, nothing left to chance, and all useless labor saved.

When the insect has fixed upon a piece of wood that suits her purpose, usually the trunk or branch of a dead tree, an old post, or a piece of wooden railing, she bores a circular hole about an inch-and-a-half in length, and large enough to admit her to pass. Suddenly she turns at an angle, drives her tunnel parallel with the grain of the wood, and makes a burrow several inches in length. None of the chips and fragments are wasted, but are carried aside and carefully stored up in some secure place, sheltered from the action of the wind.

The tunnel having now been completed, the industrious insect seeks rest in change of employment, and sets off in search of honey and pollen. With these materials she makes a little heap at the bottom of the tunnel, and deposits an egg upon the food which she has so carefully stored.

Having now shown her powers as a burrower and purveyor, she exhibits her skill as a builder, and proceeds to construct, above the enclosed egg, a ceiling, which shall be also the floor of another cell. For this purpose, she goes off to her store of chips, and fixes them in a ring above the heap of pollen, cementing them together with a glutinous substance, which is probably secreted by herself. A second ring is then placed inside the first, and in this manner the insect proceeds until she has made a nearly flat ceiling of concentric rings. The ceiling bears some resemblance to the operculum of the common water snail. The ceilings constructed by the ant are made on similar principles. The thickness of each ceiling is about equal to that of a penny.

The number of cells is extremely variable, but on the average each tunnel contains seven or eight, and the insect certainly makes more than one tunnel. As each tunnel generally exceeds a foot in length, and the diameter is large enough to admit the passage of the wide-bodied insect that makes it, the amount of labor performed by the bee is truly wonderful. The jaws are the only boring instruments used, and though they are strong and sharp, they scarcely seem to be adequate to the work for which they are destined. When all is completed the entrance is closed, with a barrier formed of the same substance and in the same manner as the ceilings.

Several species of Xylocopa are indigenous to the United States. The Virginia Carpenter bee is as large as the Humble-bee, but not covered so densely with hair. The larvæ strongly resemble those of the Humble-bee, though less bulky in body and more pointed at the ends.

Bees Settling on a Man's Hat!—On Monday last, while some men were engaged on the highway in our village, a swarm of bees were heard above their heads. They at once set their wits at work to capture them. Old pans were beaten, tea bells were rung, bushes held up for them to light on, but nothing attracted them to "come down," till the queen bee espied a straw hat on the head of Mr. Daniel Callahan, one of the workmen on the highway. As soon as the queen lit on his hat the whole swarm followed, and in a minute Mr. C's hat, face, hair, and shoulders were covered with the buzzing bees. He did not exactly like their familiarity, and fought them with dirt furiously for a considerable time, before he could drive them from his person. But by throwing off his hat, he finally rid himself of the bees and succeeded in hiving them. Wonderful to say, that during his fierce battle, he received only one sting.—*Littleton Gazette.*

[For the Bee Journal.]

Albinos in a Bee-Hive,

Five bees as white as unbleached cotton cloth were seen in a hive of black bees at swarming time. The old queen had been removed at the time; and all the young queens produced, five in number, were saved in hopes to get the color permanently fastened on other young bees, but failed. They were seen before the introduction of Italians. James M. Marvin.
St. Charles, Illinois.

Send us the names of Bee-keepers, with their Post Office address.

[For the American Bee Journal.]

Bee-Hives.

Mr. Editor:—I notice in the July number of the Bee Journal a partial description of Mr. Allen's bee-hive, by W. A. Bennett, of Syracuse. Now the first and leading objection to any of the hives in use is *the cost;* in consideration of which none but such as can make their own hives presume to follow the improvements which are constantly coming to our notice. I am very confident that a hive which would meet with general favor with the bee-keeping farmers, must combine all the present improvements, with greater simplicity and less cost,

As Mr. Bennett gave *some* of the leading features of Mr. Allen's hive, without stating the cost of the same, I will describe to you a hive which I have had in use over two years, which I made for myself, trying to remedy objections which I found in all other hives, making it simple and cheap and easy of manufacture.

My frames are made with the top-piece or head like any other movable frame, but without the bottom piece, which annoyed me from the comb cuttings and worms collecting on them. The ends are made one inch and a half wide (a little wider for the Italian bees) and one-half inch thick, being bevelled about a quarter of an inch on both inside corners. When cut to a length, make a saw cave or slot in the lower end, deep enough to receive a piece of pail hoop-iron, for the purpose of holding them in place. The top pieces are nailed in one-fourth of an inch down from the top of the ends to form a chamber between the bottom of the supers and the top-pieces, without a honey-board. This completes the top and ends of the stock department. I put some sides of thin boards, (or of pasteboard, with strips tacked to it to hold it straight,) and bind the whole together with a piece of hoop-iron, encircling the whole and making it tight by crowding one side of the hoop lower than the other. The whole making a clear open box of the requisite size, which can be handled like an old box hive. The entrance to the hive is by slots cut in the bottom board, half the thickness of the board; and by sliding my hive back on the board (over a little screen for ventilation) the bees are shut in.

I lastly inclose the whole with a box made from rough, common boards, large enough to leave a space all around the stock or inner hive, which box can be removed at pleasure, without disturbing the bees or even letting any different air to them.

The advantage of this arrangement is a more even temperature both in warm and cool weather. The supers can be made very cheap of two boards, just large enough to cover the top of the hive or chamber, (the top of the chamber is the bottom of the supers); then cut a groove half through the board all around it, and from waste pieces of glass and strips of paper, and some paste for the joints, a box can be made very nice and cheap by means of a diamond or even an old file.

The cost of this hive need not exceed a dollar and a half ($1 50) in this vicinity, where lumber costs from $15 to $40 per thousand feet.

Now, Mr. Editor, if this discription finds a place in your Journal and is understood, it would please me to have it criticised by any of your subscribers, particularly by such well-known apiarians as Quinby, Baldridge, Grimm, Langstroth, and Mrs. Tupper, believing that hives can be made less complicated and more useful. J. A. Shaw.

Dartford, Wisconsin.

[For the American Bee Journal.]

Bee-Hives.

Dear Bee Journal:—From some remarks last month I infer that you do not favor side-opening hives. In commencing bee-keeping I was early aware of the importance of having but one form of hive in the apiary, and of course wished that one to be the best.

After much time and study spent on the subject, I became convinced that none would answer at all so well as either Langstroth's or the American. I have used both for two years, and must say I find many points in the American, which I think an improvement on the first movable comb hive.

I will try and give my views, but should be glad of further light on the subject.

1st. Tall hives are better than low ones. I think all will admit that.

Bees winter very badly in Langstroth hives about here—last winter especially. When my Langstroth's were side by side with the American, with the honey board removed and a thick layer of corncobs in place of it, and winter passages carefully cut, the amount of dead bees in the spring in some amounted to nearly half the swarm, while the Americans lost scarcely any.

In Langstroth's, the surviving bees generally occupied one corner, while the other parts were covered with frost.

In the American, from the shape of the hives, the bees remained below their stores, and of course kept the heat from their bodies above them.

Mr. Quinby suggests as a remedy, tipping the flat hives on end in winter. But I am sure I should not like such a proceeding.

2d. The difficulty of removing the first comb in Langstroth hives, when they are full of honey, is such that I very often neglect it entirely, especially in old hives. But with the American, I have sometimes opened a hive of common bees so quietly as to have scarcely a bee leave the frame, using no smoke or anything else, and I very rarely kill a bee in the operation.

3d. In preparing the Langstroth hives for wintering. by covering the frames with corn-cobs, &c , if a person has many hives it is a tremendous job, and then if he wishes to look into one towards spring, they must all be removed and put back again. The same thing is accomplished in the American much quicker, and so far as my experience goes, much more efficiently, 4th. The Langstroth hive is very apt to leak in wet weather, unless covered. The roof of the American hive makes this impossible.

5th. In the improved American hive, you have no honey-board to bother with, as the frames form that themselves, and the boxes are almost a part of the body of the hive itself. Still they can be readily removed, and never contain brood, so far as I have seen.

On the contrary, it is claimed that the Langstroth hive furnishes more room on top for surplus honey-boxes. But, with the manner of raising the boxes on the American hive, when half filled, I think that all the bees of any swarm can be fully employed.

I cannot see the objection of keeping the frames all at equal distances. Will some one enlighten me? Supposing the combs all built nearly uniform as mine have been so far.

Now, Mr. Editor, I am afraid this looks too much like advertising a patent hive, but I own no right except an individual one, and have no interest except to wish to know which *is the best* hive for us all to use.

The inventor has no knowledge at all of what I am writing, and if any of your subscribers can inform us how the Langstroth hive can be used just as well and as easily in the points mentioned, I shall be very much obliged to them.

The first item mentioned is the most important, as bee-keepers here have agreed that the old bee-hive is much better than Langstroth's for wintering. What is the objection to the movable side? Any information on the above points will be thankfully received by—

A Novice.

Relative Tenacity of Bee Life.

One of the nests of *Bombus fervidus* I kept in a box for some time and watched the action of the [humble] bees; but as I then neglected to make full notes, and as my first observations were confirmed by later ones, I allude to them here only to introduce an incident which has relation to the duration of life of the various kinds which always compose the communities of humble bees. Upon leaving Warwick I left my valise, in which was a nest of bees, at the depot. Two months afterwards, in November, it was brought to me, when upon examining the nest several large queen-bees were found in a lively condition, while the males, small females, and workers were all dead. When the valise was left at the depot, there was but one queen in the nest. This incident proves that the queens are not only late in leaving the cells, but that they are capable of enduring cold which is fatal to the other bees.—F. W. Putnam's "*Notes on the Habits of the Humble Bee.*"

One community of humble bees kept by Mr. F. W. Putnam under glass on a window, with free ingress and egress, continued working until, on a very hot day, the young became baked in their cells by the heat of the sun. Then the old ones left, and did not return.

Statistics of European Bee-Culture.

FROM HAUSNER'S "COMPARATIVE STATISTICS OF EUROPE."

The ascertained number of stocks of bees in Europe (with the exception of Denmark, Sweden, Norway, the Netherlands, and Turkey) is 21,784,000, distributed as follows:

In Russia	12,500,000
Austria, (1857)	3,000,000
France, (1858)	2,200,000
Italy	1,250,000
Spain, (1861)	863,000
Prussia	400,000
Switzerland	320,000
Greece, (1860)	235,000
Bavaria, (1863)	233,000
Hanover, (1861)	201,000
Portugal	160,000
Wurtemberg	104,000
Great Britain	100,000
Belgium, (1859)	61,000
Saxony, (1861)	51,000
Hesse, (1859)	41,000
Baden, 1861)	25,000
Hesse-Darmstadt, (1858)	19,000
The rest of Germany	120,000

In the area of Europe there are on an average on each square mile	7 hives.
In Switzerland	21 "
On the Ionian Islands	15 "
In Galicia	15 "
Wurtemberg	14 "
Hanover	14 "
Italy	12 "
Austria	12 "
Greece	12 "
Hesse	12 "
France	10 "
Saxe-Weimar	9 "
Nassau	9 "
Bavaria	8 "
Russia	6 "
Hesse-Darmstadt	6 "
Belgium	5 "
Spain	4 "
Baden	4 "
Portugal	4 "
Prussia	4 "
Great Britain	1 "

On the entire area of Europe there is on an average one hive to every 11.7 inhabitants. In Greece, one to every 5.5; in Russia, one to 5,3; in Switzerland, one to 7.5; in Hanover, one to 9; in Galicia, one to 11; in Austria, one to 11; in France, one to 16; in Wurtemberg, one to 16; in Spain, one to 18; in Italy, one to 18; in Bavaria, one to 20; in Portugal, one to 23; in Nassau, one to 29; in Saxony, one to 43; in Hesse-Darmstadt, one to 45; in Prussia, one to 46; in Baden, one to 54; in Belgium, one to 77, in Great Britain, one to 291.

The annual product of honey and wax in Austria, France, and Greece is as follows:

	HONEY.	WAX.
Austria	17,600,000 lbs.	11,220,000 lbs.
France	16,020,000 "	3,840,000 "
Greece	880,000 "	880,000 "

Thus the honey produced in France averages 6⅔ lbs. per hive; in Austria, 6¼ lbs.; and in Greece, 3¾ lbs The product of wax per hive averages in Greece and Austria 3¾ lbs., and in France only 1¾ lbs. In proportion to the population of the several countries, the product of wax is in Greece ¾ lb. to each inhabitant; in Austria, ¾ lb.; and in France only 1½ ounce.

For the American Bee Journal.

Apistical Budget.

The great value of fertile queens in early spring, to supply stocks that have become queenless during the winter, is well known to bee-keepers, and to supply them has been a subject of considerable thought with me.

I have at last fallen on the following plan, and as I do not know of any similar one having been made public, I offer it for what it is worth.

Make a large box, say twenty inches wide by twenty inches long, and fourteen inches deep. Nail slats across the bottom, (pieces of lath will do), leaving half an inch space between them. The top to be made like the cap of a Langstroth hive, and just large enough to fit over this other, with holes for ventilation.

Now make eighteen small boxes, six inches wide by seven long, and six high. These are to be made as follows: sides and ends of half-inch stuff; top and bottom of wire cloth, such as is used for queen-cages. the bottoms may be fastened; the tops must be movable. On the inside of the ends, five-eights of an inch from the top, nail a cleat to hold the frames.

You are now ready for operations. Late in the fall fill one or two frames with sealed honey and put into each small box. Now lift out the frames and bees in the nuclei, with the queen to be wintered, and put them into the small boxes. When you have the eighteen filled, shut them up tight, that is so they cannot get out, and put the whole number into the large box, leaving fully half an inch space between each one. Put on the top, and you have a mammoth hive, made up of a number of small ones, whose united heat and stores are equal to the best store stocks you have. This hive is to be buried along with the rest, or otherwise protected, and will come out in the spring rich in stores and increasing in bees.

One more item and I am done. Might not pure queens be saved in this way: catch hundreds of handsome drones, and turn them loose in a large and well lighted room with a young unfertile queen a few days old? I have never tried it, but often thought I would.

I have many more items, but do not wish to crowd out others of more importance.

H. C. BARNARD.

CHARLESTON, ILLINOIS.

[For the American Bee Journal.]

Uniting Bees in the Fall.

For several years I have practiced uniting bees in the fall in the following manner:

I have a box six or eight inches deep, and just the size of the lower part of the hive. The bottom of the box is covered with wire cloth, and two strips one inch square nailed on two opposite sides to give a chance for ventilation underneath. Then paralyze all the bees you wish to unite with puff-ball smoke, put them into the box, and set the hive over it. In a short time they will revive and crawl up among the combs, and will not quarrel.

If you wish to save any particular queen, remove all but that one. Do it just at night, fastening up the hive so that the bees cannot escape until the next morning. This has always been with me a perfectly safe way of introducing queens. The bees always keep the one you give them if you remove all the others.

To paralyze bees, make a tin tube six inches long and two inches in diameter, with a wooden stopper in each end, having a half inch hole through it. Peel some dry puff balls; lay one on the coals until it smokes; then put it in the tube, and blow the smoke into the hive until the bees drop to the bottom, which will be in from three to eight minutes, according to the size of the swarm.

It is necessary that they should have room at the bottom of the hive that they may fall clear of the combs.

J. L. HUBBARD.

WALPOLE, NEW HAMPSHIRE.

[For the Bee Journal.]

Another American Bee Plant.

POLANISIA PURPUREA.

This hardy plant is said to have been brought from the Rocky Mountains. I procured a small package of the seed, which came from Kansas, and have raised it two seasons. It begins to blossom about the first of August, and continues in blossom five or six weeks. It is very hardy; the frost does not injure it, and I have not known a worm or bug to eat it.

It does best to sow the seeds in the fall. They germinate early in the spring, growing to a height of three or four feet, branching in all directions, and having a large number of beautiful purple blossoms. The bees work on it all day, gathering honey only; at least I have never seen one having any pollen on its legs.

I cannot tell yet in regard to the quantity or quality of honey it yields, as I have not raised enough for that purpose, but the bees work very freely on it.

It produces quite a quantity of seed, which can be saved after it gets through blossoming; but whether the seed is of much value I cannot say. I am going to try it on the sheep this winter, and if good for them, will report.

It does not grow so luxuriantly when sown in the spring, although it blossoms the same season. I have a quantity of the seed, and will send a package to any address if a small sum is enclosed to pay postage and expense of putting up

Will H. A. Terry (or any other man) please send me a package of seeds of *Cleme Integrifolia*, mentioned on page 50, vol. 3, of the AMERICAN BEE JOURNAL, in an article from the *Prairie Farmer?*

The season just past has been the best we have had for several years. The weather was favorable for the secretion of honey, and the bees have gathered much larger quantities than usual from red clover and buckwheat.

I almost forgot to say that I would return the compliment by sending a package of Polanisia purpurea to the one who sends me some *Cleome Integrifolia*, and also many thanks, as I wish to test the various kinds of bee plants offered.

J. L. HUBBARD.

WALPOLE, NEW HAMPSHIRE.

For the American Bee Journal.

MR. EDITOR:—Since in a former communication to the JOURNAL I was bragging up the amazing docility of my Italian bees, I have thought it advisable to transmit to you, at this time, for publication, the extraordinary effusion of my little daughter's astounding inspiration, which although not altogether unaided by my own, (of course,) has perpetrated the following persuasive exhortation to a decrepid Italian Bee. F. V.

To an old Italian Bee.

Restless wanderer through the glade,
  Whence and whither art thou bound?
Come and linger in the shade,
  Rest thee from thy ceaseless round.

Torn and tattered are thy wings,
  And their hum betrays thy days,
Lesser grow thy golden rings,
  Fainter their once brilliant rays.

Still, though worn with age and cares,
  Unrest is thy chosen lot;
'Midst the glen's unnumbered snares,
  Thou yet roam'st and heed'st them not.

Song with industry combined,
  Is thy glory, end, and aim;
Thou art happy, free and kind,
  Universal is thy fame.

Sweeter far than Siren song,
  Heard by sailor on the main,
Is to me, the flowers among,
  Hum of thine, upon the plain.

Truly, labor is thy joy,
  Unlike man's enjoyment, thine;
For no tedious hours annoy
  Thee, like him 'mid flowers and wine.

Unlike him; thou mad'st no vow
  To desist from drinking mead;
But thou sipp'st it now, and now;
  Nectar is thy drink and feed.

Not like him, when anthems swell,
  At thy oft reviving revels,
Dost thou buzz of crackling hell,
  And of grinning death, and devils.

Yet, thy end is much like his,
  Here we may the fact accredit,
Still, it seldom ends in bliss,
  We have heard, and sung, and read it.

Fire and brimstone are thy lot,
  When thy toilsome life is ended;
Stay, repent thee, on the spot,
  Lest thou perish unrepented.

Four score days and ten have past,
  Since thy bibbing days began;
Unless thou repent at last,
  Thou wilt die a drunken man.

Tippler, sabbath breaker, thief,
  Busy body to thy end,
Of all outlaws thou art chief;
  Hence, before thou die, *amend.*

ADELLA C. VARRO.

WASHINGTON, PA., Aug. 27th. 1867.

[Translated for the Bee Journal.

Various Items.

1. *Will bees accustomed to a fertile queen accept an unfertile one?*—It is commonly believed that when a fertile queen is removed from a colony of which she has long been an inmate, the bees will not readily and immediately accept an unfertile queen which may be offered to them as a substitute. An occurrence in my apiary last summer, however, shows that such is not invariably the case.

I removed a fertile queen from one of my hives, designing to use her elsewhere. But having, at the time, a supernumerary young queen, recently hatched and still unfertilized, I intended to introduce her to the bereaved colony in a cage; but after I had opened the hive and placed her on a comb, she flew off and thus escaped imprisonment. I concluded that she was lost, as she was a stranger and would scarcely seek the hive; or even if attracted by the humming, she would probably be attacked and destroyed by the bees, as yet unconscious that they had lost their queen. Thus thinking, I closed the hive and left.

A few days after I procured a queen cell nearly mature from another hive, to insert it in the colony believed to be queenless. But this proved to be needless, for on opening the hive I found the young queen supposed to have been lost moving about very actively on one of the combs. Well content to find it so, I closed the hive again, and carried back my queen cell.

I presume the young queen kept hovering about the hive till the bees discovered that their old queen had been removed, and began to manifest their uneasiness after my departure. Attracted by the "noise and confusion," she may then have ventured to mix with the crowd, and been kindly received at the moment when from conscious queenlessness they were verging on despair.

2. *Safe introduction of queens.*—When preparing to transport my stocks to a distant heath last autumn, to enable them to avail themselves

of the abundant fall pasturage there, I made an artificial colony by supplying a hive with empty combs, placing therein a caged, fertile queen, and stocking it with bees taken from various overpopulous colonies. When closing the hive the queen was accidentally liberated, and in this condition the colony was transported to the heath When arrived there, and the entrance was opened, the bees rushed forth in crowds, but in a few moments returned, became settled, and proceeded to collect pollen. Several weeks after, when brought back to my apiary, this colony contained plenty of brood. This shows that to a colony composed of bees gathered from two or three different hives, a fertile queen may be safely introduced without the usual precaution of caging her.

3. *Will early swarms always accept of a ready furnished hive?*—I suppose I am not the only bee-keeper who has found that bees will sometimes desert a hive containing empty combs. I had such a case last summer. On the 26th of June a very large swarm of black bees issued from one of my hives. I placed it in a hive furnished with nice clean combs. On the 27th it abandoned the hive. I rehived them immediately, and caged the queen; but on the 28th they came out again, deserting their queen. I now placed them in another hive, containing frames furnished with only narrow strips of guide-comb. They remained in it perfectly content, built combs rapidly, and collected stores enough to carry them through the winter.

I placed an artificial colony in the furnished hive a few days afterwards, and they seemed well pleased with the provision thus made for them, commencing operations forthwith, and prospering well.

Swarming bees, particularly those of second swarms, appear to have an instinctive desire for comb-building, and are prone to reject "furnished quarters." This can only be overcome by supplying them with a comb of brood.

[For the American Bee Journal.]

Proposals Wanted,

Through the Bee Jounal, to furnish me

First—with a stock or swarm of pure Italian bees that are as good workers as half breeds.

Second—a queen that will reproduce others, exact counterparts of herself, with no variations.

Third—a queen that is entirely yellow and will reproduce others in any numbers, like herself.

Fourth—a queen that produces workers in any number, with *four* yellow bands.

Fifth—a queen that produces drones all yellow, or with one-half brown on the two last bands only.

Persons having any or all of the above-described stock will do well to let it be known through the Bee Journal.

St. Charles, Ills. James M. Marvin.

Send us the names of Bee-keepers, with their Post Office address.

On the Reproduction of Bees.

By Prof. C. T. E. von Siebold.

It is high time that zoologists and physiologists should turn their attention to a phenomenon in the history of the reproduction of animals, which, during the last few years, has warmly interested the apiarians and set them in the greatest excitement. I mean the mode in which each separate colony of bees contrives that the worker,-drone,-and royal-cells prepared by it are always furnished with the proper eggs, from which, as is required by the arrangement of these different kinds of cells, the worker-larvæ, drone-larvæ, and queen-larvæ destined to dwell in them, are always disclosed. Hence the oviposition in the bee-hive must be effected according to peculiar rules, in order that the conditions just mentioned may be fulfilled. This act of oviposition must be subjected to determinate laws, which do not affect the oviposition of most other insects, as in these it is a matter of indifference in what consecutive order and number male and female eggs are laid. But the question, how each separate bee-colony succeeds in obtaining the suitable supply of eggs for all its combs, differently as these are prepared as regards the number and arrangement of the three kinds of cells, has not been easily answered. Nay, we may perhaps say that this process has hitherto appeared to be an impenetrable mystery, the solution of which has not been effected by the most careful endeavors and observations of the apiarians continued for many years. This mysterious circumstance, which distinguishes the oviposition of the bees, has also been the cause that from time immemorial, the apiarians have been disputing about the signification of almost every individual step in the process of reproduction in the bees. This contest has continued even to the present day, and it is scarcely possible to imagine a single absurdity with regard to the history of the reproduction of the bees, which has not already been expressed in sober earnest by some apiarian, and is now to be read in print in some of the innumerable bee-books. The greatest confusion especially was caused by the circumstance, that people could not agree with regard to the sexes of the bees. The drones were regarded as females, and the queens as males; sometimes it was supposed that the workers alone had the care of oviposition; sometimes the true act of copulation between the drones and the queen was supposed only to take place in the interior of the hive; the wedding-flight of the queen would then only be a sort of purification. Whilst from another side it was asserted that the act of copulation was never performed in the hive, but always high up in the air during the wedding-flight. The act of coition was thus entirely denied, the queen becoming fertilized by the agitation of her body during the wedding-flight. I could fill many pages here with these contradictions, which are deposited in the annals of the history of bee-life, and by which the study of this otherwise so interesting subject from books; has been stunted into a most ungrateful task.

The endless dispute about the reproduction of bees, often carried on with great animosity, in which the opponents of the different theories of generation relating to the bees often showed themselves to be mere dilletanti, miserably furnished with natural-history information, was not fitted to attract the interest of physiologists. Indeed, it appeared as if the apiarians wished to fight the battle out among themselves without foreign assistance; for the contest was never brought within the province of an earnest investigation of nature. Moreover the naturalists could not very easily take part in the dispute, as they were mostly deficient in the practical knowledge of the economy of bees, without which every attempt to settle the matter must have turned out imperfect, and would have been received with direct distrust by the obstinate bee-masters, to whom such an attempt might have served as an instructive hint. In this dispute of the apiarians, which was constantly blazing up afresh, the activity of the naturalists limited itself to their ascertaining and establishing as an incontrovertible truth, by the aid of the dissecting knife and the microscope, that the drones are the male individuals, that the queen is the female individual, and that the workers are not merely a sexual, but female individuals whose reproductive organs had not come to their full development. Upon this subject investigations were made and published by the zootomists at very different periods. I refer only to the works of Swammerdam, Reaumur, Mademoiselle Jurine, Suckow, and Ratzeburg. Although the representations of the male and female sexual organs of the bees have been copied from Swammerdam's *Biblia Naturæ* by various writers upon these insects, and consequently the facts established anatomically were communicated to the apiarians, yet for a long time these truths could not boast of a recognition by all bee-keepers. These entomotomic investigations probably did not appear sufficiently significant to the apiarians, because there were still many things in the history of the reproduction of the bees, which could not be explained with this knowledge of the sexual relations of these animals. Many practical apiarians looked upon this anatomical proof of the sexes of the bees merely as theoretical stuff, and returned to their so-called practical way, which they imagined to be the right one, without regard to these facts, preferring to explain the different sexual functions in a perfectly arbitrary and unnatural fashion, according to their own individual and often very limited views.

After I had, in the year 1837, ascertained the existence and signification of the seminal receptacle in female insects, and in 1843 called attention to this reservoir of semen in the queen bees, by the functions of which many phenomena in the reproductive activity of the bees, which had hitherto remained problematical, or had been incorrectly explained, might be properly conceived, these investigations exerted no particular influence upon the perverted views of most of the apiarians. They probably paid no further attention to them, regarding them as theoretical stuff, and yet, by the recognition of the function of the seminal receptacle, a phenomenon in the bee-hive, which had been a source of wonder from time immemorial, could now be correctly explained. Thus it had been ascertained by me that after copulation had taken place, the semen of the drone, which filled the seminal receptacle to overflowing, remained in this place, capable of impregnating the eggs, not merely for months, but for years, as might be seen from the movements of the spermatozoids of this semen continuing for that period. This explains how a queen, fertilized by a single coitus, after discharging her eggs in the first year, may again in the following year, and even still more frequently, lay eggs capable of development, such as the hive requires, as fertilizing semen is constantly preserved in her seminal receptacle, to fecundate eggs even for so long a period. But even this discovery was ignored by most of the apiarians. As a general rule, fresh scruples as to the value of such anatomical and microscopical investigations were constantly rising among them with respect to the determination of the sexual functions of the bees.

There were two phenomena especially in the economy of the bees, which troubled the minds of the apiarians with reference to the division of the sexual functions in those insects. I mean, *first*, the capability of an imperfect-winged female to produce brood, and, *second*, the production of brood in queenless hives. Those who acknowledged the queen as the female individual of the bees, and, in accordance with the physiological laws hitherto current, ascribed to her the property of laying eggs capable of development only after previous copulation and the filling of the seminal receptacle with spermatozoids, were, in consequence of the first-mentioned phenomenon, rendered doubtful where and when the copulation of the queen bee is affected. From this arose the dispute, abundantly battled out in the books and journals relating to bees, as to whether the queen copulates in or out of the hive. That the former was possible was thought to be proved by the imperfect-winged queen laying eggs capable of development, and thus the two sexes of the bees were supposed to perform the act of copulation in the interior of the bee-hive, although such a copulation in the hive had never been seen. In those cases in which the second remarkable phenomenon previously mentioned occurred, namely, brood in a queenless bee-hive, we should entirely mistake the sexual functions of the bees. Such observations were principally employed in raising objections of insufficiency and untenability against the scientific endeavors at the determination of the sexes of bees.

In most zoological and entomological works we find all the acrimonious controversies regarding bee life either imperfectly mentioned or scarcely indicated, and hence it may have happened that the history of the reproduction of the bees has remained untouched by those physiologists who have specially occupied themselves with the generation of animals. On this side no one had any idea what difficult problems are here presented to science for solution.

Moreover, the physiologists were lately engaged by another very attractive but also very difficult subject, which incited them to inquire after the laws, according to which the asexual reproduction, previously regarded as an exception and now characterized by the name of *Alternation of Generation*, occurs disseminated among the lower animals, together with sexual generation.

By the entomologists the physiology of reproduction has been very scantily enriched of late, as most of them found their task only in rectifying the species of insects. Many of them endeavored, at the expense of much time and trouble, to determine those species which have been furnished with names by Linnæus and Fabricius, whilst the majority found a still greater pleasure in enriching the systematic catalogues of insects, with a few perfectly new, although extremely insignificant species.

As up to a very recent period the apiarians formed a sort of close corporation, wishing to answer the most important questions relating to the reproduction of the bees among themselves, it may thus have happened that the fruits with which the knowledge of the history of reproduction was enriched by the labors of modern naturalists, could not be perceived at all by this close and short-sighted circle, and consequently could not be made use of by them. Nor did any voice ever force its way out of their circle which might have called in the assistance of the physiologists in the decision of certain problems in the reproduction of the bees. Only within the last few years has the demeanor of the apiarians changed in a most satisfactory way, and it must be said, in praise of the present circle of apiarians, that at this moment it numbers among its members men who have arrived at a conviction that bee-life does not merely serve to furnish man with wax, honey, and mead, but that it constitutes an extremely remarkable link in the great and most multifariously composed chain of animal existence, the importance of which, however, can only be understood by the assistance of knowledge, such as is furnished by the present development of the natural sciences. By the activity of these enlightened men a complete revolution has taken place in bee-keeping; a rational process introduced by the apiarians, and rewarded by the richest results, now celebrates the most complete triumph over empiricism; and the names of Dzierzon and Berlepsch above all deserve to be named as conquerors.

[For the American Bee Journal.]

Italian Bees and Red Clover.

Mr. Editor:—In looking over the September number of your excellent Journal, I read an article from Mr. J. McCune, in which he proposes two questions to "bee-men and novices." The second of those I propose to answer, as I claim to be one of the persons to whom the question is addressed.

"*Has any one, not raising queens for sale, ever had bees to work freely on the second crop of red clover?*"

I propose to answer this question to his entire satisfaction. I cannot claim, however, that I saw *my* bees work on red clover, second crop; but will state that Mr. B. Z. Replogel, of Hagerstown, Ind., and myself visited the apiary of Messrs. Langstroth & Son on the 3d day of August last, and after spending a short time in the examination of a few stocks of bees and their Italian queens, and the patent machine for extracting honey from the comb in frames, I asked Mr. Langstroth to settle the question, with me at least, whether the Italian bees could gather honey from the second crop of red clover or not. He requested Mr. R., myself, and several others to step into his clover patch, which was close at hand, and satisfy ourselves on the subject. We did so, and found the Italian bees working freely upon the bloom, without seeing a single black bee. G. B. Long.

Hopkinsville, Ky., Sept. 13, 1867.

Bradford County, Pa.

This county being a white clover and buckwheat region, is a good place for bees. The drawbacks are very changeable weather both summer and winter, long winters and *foulbrood*.

This disease is the greatest enemy of all. We know nothing of its cause or cure. If you know anything that will prevent or cure this disease, you will confer a great benefit on your readers by publishing it.

I bought an Italian queen bee, reared a few queens from her, and gave them to some of my black colonies. The result is I get more honey stored by the hybrids; but they are so cross that I have sometimes wished I had never seen them. They find their way into the house and everywhere where there is honey.

I know that there is a great deal said and written about the good nature of the Italians when pure, while it is generally admitted that hybrids are more vindictive than *either* variety when pure. Now, how can this be reconciled with the laws that govern all other transmitted qualities of animal or vegetable being?

I know of nothing else that deviates so strangely as it is claimed that bees do in this case. Where do they get this tendency to pugnacity, if not from their ancestors? And how can their progenitors impart that which they do not possess?

If the truth be hid from the public to subserve speculation, or for any other reason, it cannot be so held very long, and honor to the man who is honest enough to tell it first.

P. Peckham.

Foulbrood still remains a mystery, its source or cause being alike unknown. No efficient prevention has yet been discovered; nor has any prompt, conveniently available and unfailing cure yet been devised.

It is unquestionably true that impure Italian bees, or hybrid, are peculiarly ill tempered and irritable. For the present we must rest content to know the *fact* without presuming to assign a reason for it.

Send us the names of Bee-keepers, with their Post Office address.

[From the Canada Farmer.]

Honey and How to Judge It.

There are many kinds and qualities of honey. Almost every kind of flower secretes honey peculiar to itself and possessing to a considerable extent, the properties of the plant or flower whence it is derived. Hence some kinds of honey are very unwholesome or poisonous, being gathered by the bees from noxious flowers; other kinds again are simply unpleasant to taste—not fit for the table. It has been supposed by many that bees make honey, but such is not the case, they only gather it from the flowers that secrete it; hence its different qualities and flavors. As we have few if any poisonous flowers in Canada, we have little or no unwholesome honey. In the Southern States much of the honey is quite poisonous, and cannot be eaten until after it has been boiled, which is said to evaporate a portion of its bad qualities. There are people who think they cannot eat honey even in Canada, without first boiling it; but if such were to select honey gathered from white clover or bass wood, I have no doubt they could eat it as safely as any other sweet.

Bees never mix the different kinds of honey when depositing in the hive. If bees commence to work on white clover they will work on nothing else, so long as that kind of honey can be obtained to any great amount, and all that kind is deposited by itself. When they leave that for buckwheat they no longer deposite it in the same cells with the clover honey, but in adjoining cells, or in a separate piece of comb. Experienced bee-keepers are aware of this, and as soon as buckwheat blossoms they remove all boxes that are nearly full—that is, if they which to keep the clover honey pure. Again, when removing honey from boxes for the purpose of straining, those pieces of comb containing buckwheat honey may be separated, and the clover honey preserved pure. If some of those who exhibit honey at the fairs were to be more careful as to the kind of honey they selected for exhibition, they would be more likely to obtain prizes. I have seen fine white clover honey greatly injured by leaving a small portion of buckwheat honey mixed with it. There being so many kinds and qualities of honey, there is a chance for selection.

As our Provincial Fair is close at hand, I take the liberty to explain how honey should be judged—in other words, to point out what the characteristics of good honey are, for the benefit of those who may wish to compete, as well as for those who may be appointed to judge. Though I have no reason to complain, having received first and second prizes for two or three years, yet many times at our county fairs I have known the prize to be awarded for honey on account of it possessing one peculiar feature, that of being thick; at other times on account of its being of a very light color; while little or no regard were paid to other important qualities. Honey in the comb can only be judged by its appearance, so long as it is exhibited in close boxes, so that it cannot be tasted. It often happens that an inferior article of honey in the comb obtains the prize, as the prize is awarded to that which is the whitest; but the whitest comb does not always contain the purest honey. Yet, as before stated, so long as honey is exhibited in close boxes, it is proper to award a prize for the whitest comb. It is, however, quite different with honey in the jar, which is open to inspection, and which, to be first-class, should possess the following characteristics: light color, thickness, and pleasant flavor. Though honey may not always possess all these qualities, yet the nearest approach thereto should be awarded the first prize. It would be very improper to award the first prize to a jar of honey on account of its light color, if another jar was of a thicker consistency and better flavor, although considerably darker; and so of the other qualities. I may safely say there are only two kinds of honey gathered in Canada which possess all the above qualities. One is gathered from clover, and the other from that abominable nuisance, the Canada thistle. Both, if properly prepared from virgin comb, are light in color. That gathered from the thistle is generally somewhat thinner than clover honey, but its flavor is more aromatic, and to most tastes more agreeable, especially when combined in proper proportions with clover honey, whose flavor it overcomes or hides. The proportions are about one part of clover honey to two parts of thistle honey. This, when properly prepared, will eclipse all other honey, and carry off the prize, as I have proved for three years. J. H. THOMAS.

BROOKLIN, ONTARIO, Sept. 4, 1867.

Flanders' Apiary.

The editor of the *Ohio Farmer* recently visited Kelley's Island, in Lake Erie, and gives the following account of what he saw there in the "bee line:"

"W. A. FLANDERS, THE BEE MAN.—Professor W. A. Flanders, you may have heard of him, has his Apiarian Institute on Kelley's Island, and of course we visited his Institution. Mr. Flanders has a host of bee-families, dwelling in busy harmony under every green tree in the neighborhood. Talk of big prices for merino rams, Flanders can get more money for an Italian queen bee, with three rings around her tail, than any ram pedler can get for the best Vermont merino in his flock. Flanders showed us (in a vial of alcohol) one of these amiable little female sovereigns who had lately fallen in a duel with another amiable little female sovereign, for which he declared, with a sigh which came from as low down as the seat of his broad pantaloons that he would not have taken sixty dollars! Bugs is riz'! But then the thing can be settled by arithmetic; here are fifty other amiable little female sovereigns, bred from this little insect in the vial, for each of which Flanders can take from twenty to twenty-five dollars. The demonstration is plain—a little insect not so big as a tooth-pick, worth more money than a short-horn bull! The idea would be ridiculous if it was not true. But Flanders has improved upon the original Doctor Jacob Townsend, and instead of being satisfied with the orthodox full-blood Italians with three rings, has got one better, and showed us a queen of his raising with four rings around her body, all of the royal purple and gold."

THE AMERICAN BEE JOURNAL.

WASHINGTON, OCTOBER, 1867.

☞ The American Bee Journal is now published monthly, in the City of Washington D. C.,) at $2 per annum. All communications should be addressed to the Editor, at that place.

Our remark in the last number of the Bee Journal respecting side-opening hives, was not designed to express an opinion as to their qualities as a home for bees, but simply to state the *fact*—of which many bee-keepers seem not to be aware—that such hives are not a new invention. They have been in use in Europe for more than thirty years, and especially in the shape given to them by Dzierzon, when introducing the movable bar or slat, have been till quite recently the "crack hive" there of improved bee-culture. Latterly, however, they are regarded with somewhat less favor, and are no longer exclusively used, though undoubtedly still retained by the greater number of apiarians. Of their properties, good or bad, we do not now undertake to speak, as we have never tried them. Mr. Langstroth, we believe, used them before adopting the present construction of his hive, and it is fair to presume that he did not reject them without sufficient reason. We regret exceedingly that his continued ill-health precludes the hope that he will be able, for some time yet, to state what that reason was

Our esteemed correspondent, Novice, seems to labor under a misconception also, respecting the Langstroth hive. He appears to regard it as restricted to one particular form—broad and flat. This is by no means so. You may give it any shape or form you choose, or find convenient, or deem advantageous—broad and flat, oblong and shallow, oblong and deep, square and tall, or square and flat. Any form you choose to give it still leaves it a Langstroth hive. We have it now, and have long had it, of three different forms—square and shallow; square and deep; and oblong, narrow, and of medium depth. With ordinary care we have had no difficulty in wintering bees well in any of these; but it is precisely with the *shallow hive* that we have been most successful in that particular. We have never used the corncobs, and cannot say whether they are more troublesome than serviceable, or not. The removal of the honey-board is ordinarily all that is required in this region.

A comparative test between adjoining hives of differing shapes is apt to be deceptive. We have known bees to pass the winter in a very different condition in two neighboring old-fashioned box hives of precisely the same shape, make, dimensions, and materials, and containing colonies and stores so nearly equal in the fall, that it would not have been easy to point out an essential difference. Both survived the winter—the one in good condition, bees lively, and with surplus stores; the other weak, languid, and stores nearly exhausted. The cause of the difference was certainly not in the shape or size of the hives, or of the material of which they were made. We have no doubt that those who use straw hives exclusively, which are usually thought the best for wintering, have occasionally experienced similar contrarieties.

When Dzierzon's side-opening hives were first introduced in Germany, the general complaint of those who tried them was that "bees winter badly in them." This objection continued to be urged for several years. Gradually less was heard of it, and finally it ceased to be mentioned. Meantime no material change had been made in the form of the hive. Use and experience probably enabled those who have them, to put matters in better trim in the fall than they could originally.

If a full set of frames is kept in the Langstroth hive during the entire season, they are unavoidably placed in close proximity to each other. There may then occasionally, when honey abounds, be some difficulty in removing the first frame This is not the case, however, if one frame is left out during the working season, and the others set no further apart than they should be, leaving the vacant space at one side.

A badly made top of a Langstroth hive will leak; and so, we imagine, will a badly made top or roof of any other. We have Langstroth hives that have been in constant use for thirteen years, and never leaked; and have others that did leak the first season. A device susceptible of being well and efficiently executed, is not to be condemned for a defect not inherent.

So long as multiplying stock is the main object, the honey-board of the Langstroth hive is decidedly useful, and a convenience. When that object has been accomplished, and large honey harvests are mainly aimed at, it *can* be dispensed with. Properly adapted supers may then be substituted; or, retaining the honey-board, a second tier of frames, with a horizontal divider, may be introduced with obvious advantage. This has been done years ago in the

Langstroth hive; and it still remained a Langstroth hive, even with such change of arrangement.

We do object to making the movable frames laterally a fixture, for nothing is gained by it. Why tie together the fingers of your hand when whatever can be done with them thus tied, can be done with them separate, and many things in addition utterly impracticable otherwise? Originally both frames and bars were thus permanently fixed, but the advantage of liberating them was soon perceived, and the marvel now is that they were not at first made free. Boys may use bladders when learning to swim, but will never become experts in the natatory art, if they adhere to those supporters permanently.

As regards hives, the more simple they are the better. All you really want is a box—whether square or oblong, flat or tall—to receive, enclose, and support the frames. The top, the honey-board, and the frames should be movable. The bottom may be movable or not, at the option of the operator. All beyond or beside this only complicates matters, without superadding any advantage. We have observed, however, that fancy and habit have as much to do with fixing preferences in bee-culture as in other pursuits; and that assiduous practice afterwards, even with ill-adapted means, enables the bee-keeper to get along very satisfactorily to himself, and often with tolerable success. Hives, too, are frequently contrived or selected in accordance with preconceived notions, in the expectation that the bees will conform to our whims. This has always been a general error with those who aimed at producing something superior to the common cottage hive, instead of studying the natural habits and wants of the bee, and then seeking to adapt their inventions or modifications thereto. A large majority of the model hives in the Patent Office plainly indicate that of their authors, many really knew little about bees, and others resorted to ingenious efforts to evade or circumvent the patented claims of meritorious inventors. In this regard, however, demonstrations of ingenuity are by no means confined to the sphere of bee-culture.

Another Bee Plant.

The plant named below grows plentifully in the marshy grounds on the borders of the Eastern Branch of the Potomac (the Anacostia) at Washington, and furnishes most valuable fall pasturage for bees, as it remains in full bloom several weeks. Our bees are now busy on it, and frequented it last year till the first week in October. It is unfortunately an annual, and may not furnish equally abundant supplies every year. The honey it yields is excellent and well flavored. We enclosed a specimen of the plant to Prof. T. C. Porter, of Lafayette College, Easton, Pa., and have from him the following in reply.

"The plant you enclosed is *Bidens chrysanthemoides*, Michx. (Bur-Marygold). You will find it in Gray's Manual. It is common in swamps and along the muddy borders of streams throughout the United States. I did not know before that bees worked on it, and will add it to my list of honey-bearing plants.

If all the bee-keepers of the country were to observe the plants frequented by bees, and what they gather therefrom, and dry flowers and leaves, however rudely, and send on those specimens to the Bee Journal with their notes, I could readily identify the plants; and thus very valuable material for a bee flora would accumulate in a short time. Dried specimens of plants, unaccompanied by writing, can be sent by mail for a trifle."

For the American Bee Journal.

Swarms Deserting Brood.

Mr. Editor: It has often been asserted that a colony of bees would never desert a hive when brood was present in its various stages. Indeed, I have always laid it down as a rule that sure inducement for a new swarm to stay in their hive, was to take a card of brood comb from a full hive and put it in the new hive at the time of swarming. But I have a case in point to the contrary. On the 10th day of July, I forced a swarm into a new hive, and as I always do, inserted a card of brood comb. At the time there were maturing queen cells in the parent stock, and everything appeared to be in the best condition. But on the third day while a natural swarm was in the air, this forced one left its hive and joined the one on the wing. Subsequently they both left for the woods. On examining the deserted hive, I found new comb commenced, but almost wholly destitute of bees.

Has any other had like experience, and how will we account for the occurrence?

B. S. Hoxie.

Cooksville, Wisconsin, Sept. 10, 1867.

☞ Inserting brood comb alone is not always a preventive of desertion, especially if the brood is nearly mature. Select a comb with unsealed brood, add another containing honey, (or take one containing both unsealed brood and honey,) and supply the swarm with water, and it is not at all likely to forsake its hive.—Ed.

A Singular Case.

I have a queen bee laying eggs which do not hatch. She is forty-eight days old, and cannot fly.

James M. Marvin.

St. Charles, Ill. Sept. 9th, 1867.

[From the Ohio Farmer.

Success in Bee-Keeping.

I thought I would give your readers a little of my experience in bee-keeping. I had twenty-four swarms last fall, which I buried at commencement of winter as usual. Most of the hives were rather light, as my bees made but little honey last season. When I took them from the clamp in the spring, I found that two swarms had starved to death, and one died afterwards from having lost its queen. The remainder were in good condition. I put on the honey boxes about the time that the white clover made its appearance, having previously stuck a piece of nice white comb into nearly every box. I use the Langstroth hive, and use three boxes to a hive that will hold thirteen pounds each. As soon as a box is full I take it off, and put another in its place.

Now for the result of their labor this season. From the 2d of July to the 14th of August, I took from the twenty-one swarms and their increase, 963 pounds of nice box honey, nearly all of which I have sold for cash at my own door. The increase is ten good swarms saved, and two or three that ran or flew away.* From three hives that did not swarm, I took over eighty pounds each; from a young swarm that came out on the 26th of June, which I put into a hive filled with empty combs, I took over seventy pounds; from another that came out June 21st, to which I also gave empty combs, I took fifty pounds; from another that came out about the 10th of July and was put into an empty hive, I took twenty-six pounds.

Apiary. Cr.	
By 963 pounds of honey	$216 00
10 swarms	50 00
Total	$266 00
Apiary. Dr.	
To expenses, including care, burying, honey boxes, and interest on capital invested, and everything except hives	46 00
Net profit	$220 00

Can Professor W. A. Flanders, the bee man of the Apiarian Institute on Kelley's Island, who raises Italian queens that have one ring more than *pure*, or any other bee man, show a better result from twenty-one swarms of Italians, or three or four single swarms, if kept in common sized hives? The Italians may be, and probably are, an improvement on the common bees, but I think I should be a very ungrateful fellow to complain of my *natives*.

A. C. Brigham.

Trumbull, Ohio, August, 1867.

P. S.—Since writing the above, I have read the account of Mr. Gould's (of Wenham, Mass.,) success with Italians, which pretty nearly beats me, but *not quite*. I have tried his corncob arrangement for wintering bees, but like burying much the best. I have never succeeded in obtaining *near* as much surplus honey in small boxes as I have in larger ones. A. C. B.

Correspondence.

Martinsburg, Pa., Sept. 7.

Inclosed please find two dollars for your Bee Journal. I am a beginner in business. My success was poor until now, prospects are good. On May 20th last, I commenced with four colonies and increased them to fourteen. Ten of these weigh over one hundred pounds each, and two of them over one hundred and fifty pounds each. The remainder will winter well. My hives weigh about twenty-five pounds each, which is included in the above figures. Let this suffice for the present, and at some future time I will give you my experience somewhat in detail, which if you think fit you may publish.

S. B. Replogel.

Federalsburg, Md., Sept. 8.

I am very much pleased with the Bee Journal, and wish you much success. I will avail myself of every opportunity to advance the interest of your valuable paper.

M. L. Smith.

New Berlin, Pa., Sept. 12, 1867.

Inclosed please find two dollars for the third volume of the Bee Journal, which I think is getting better every day. If bee-keepers know their own interest they will not do without such a valuable periodical.

R. B. Oldt.

Littleton, (N. H.,) Sept. 12.

I purchased a swarm of Italians last fall. They wintered badly, and consequently have done nothing but to make up their loss.

I noticed a question in the September number of the Bee Journal, whether any one not raising queens for sale ever had Italian bees to work freely on red clover. I have watched mine closely this summer to ascertain, having heard that they did; but I am satisfied they do not work on red clover as long as white clover is plenty. After that is gone they will take the red.

Another article from the pen of H. A. Terry, concerning his bee plant. I should like to have a few seeds very much. Would the gentleman send me a few in a letter, I will pay him for his trouble.

Mrs. Laura Page.

Youngsville, (Pa.,) Sept. 19.

Inclosed please find two dollars ($2) for volume third of your Bee Journal. Cannot do without it.

Willard J. Davis.

[For the American Bee Journal.]

Italian Bees.

Mr. Editor: I am sure that every reader of your valuable paper, if he is at all interested in bee-culture, must be well rewarded for the small outlay of the subscription price.

It is sometimes consoling to one that has had a certain kind of training or experience, to know that others have arrived at like conclusions by almost the same road. And while I admire the earnestness and candor with which each writer puts forth his views, I must yet confess it is highly amusing to read the articles and advertisements about Italian bees.

The assertions made and the *sharp hits* indulged in by the different correspondents, remind me of the old story of the chameleon. One gives one test, another something else. One raises them on an "island twelve miles from shore" (nice place surely, out there on the water, rocking in the cradle of the deep,) another raises them on the top of a high mountain, where "native" bees cannot fly.

And now, I submit, is it not too bad, with all this painstaking on the part of *disinterested* men, and when I had pictured to myself the pleasure of possessing *one* pure queen, just to see how the striped fellows would look, and handle her progeny,(never expecting to raise any more that would be good for anything, because I have no mountain or island on my premises,) to have another writer put in his pen and say: "Gentlemen, stand back, you have no pure queen in the lot!"

Well, friend Grimm is not to be fooled. He is going to make a *ten-strike* by going right to the place where they manufacture the simon pure article; and as he lives only some thirty or forty miles from me, I hope I may live to see one.

Now seriously, gentlemen, if it is so much trouble to get pure stock, and then more trouble still to keep it pure, what inducement can it be for small fry like myself to think of Italianizing my "natives?" I am only left to the *cruel* mercy of the hybrids, which they tell us is something like the hate of an Indian: once get him mad at you and he is sure never to forget the injury. But the strangest thing of all is that these men with such assertions can persuade others to buy. Will some one come to the rescue?

B. S. HOXIE.

COOKSVILLE, WISCONSIN, Sept. 20, 1867.

For the American Bee Journal.

Wasting Wax, Hives, Red Clover, &c.

MR. EDITOR: Mr. Quinby says that bees, *when constructing comb are constantly wasting wax, the quantity often amounts to a handful or more, &c.* (See his "Mysteries of Bee-Keeping Explained," pages 251 and 252.) I used to think that it was necessary for the bees to waste considerable wax in costructing their combs; but for the last six years I have known better. If you have the bees in the right kind of hive, and ventilated just right, they will not waste one particle. While they are building comb, it is necessary that they should be kept in as small a compass as possible, in order to keep up sufficient heat to work the wax; and then there is none lost. For this purpose, I find a division board indispensable. Mr. Quinby's two story bee-house on page 111, looks nice in a picture, but in practice the upper story is good for nothing for bees. I tried that plan sixteen years ago, and so know just how it works. Again, he says that some hives will do well, and others standing by their side yield no profit. I must confess that I was greatly disappointed on reading his late work. I expected that it would be fully up to the times. Why did he not tell us how to remedy this and make all swarms equally prosperous? Well, Mr. Quinby will probably say that it is easy enough to criticise; but let Gallup write a better book. I could not possibly do it, because I am no scholar. But let every one try to make the BEE JOURNAL the best source of information on the bee question.

Mr. J. L. McCune wants to know if ever any one had bees to work freely on red clover. Yes: in some seasons the blossom is shorter than in others. I recollect four different seasons in my experience that the common black bees worked very freely on it, and gathered large quantities of honey. At other times the blossom is so long that neither black bees nor Italians can gather honey from it.

Mr. S. C. Wilson's difficulty can be overcome by using boxes large enough to contain a full frame, or a close-fitting division board in his full-sized hive, with bees enough to occupy the full frames. Small boxes are a perfect nuisance any way.

ELISHA GALLUP.

OSAGE, IOWA.

For the American Bee Journal.

Foulbrood.

Foulbrood made its appearance in my apiary ten years ago. Five years ago I let my bees run out on this account, and I procured others free from disease. Since then my bees remained unaffected, till since they have gathered from the pine this season, and I now find one-fifth are tainted with foulbrood. Is not this strong evidence that this disease originated from the fluid collected by the bees from the insects on the pine?

I used to hold the idea that foulbrood was of recent origin in this section. But on inquiry among old bee-keepers, I find that they lost stocks many years ago; and from the symptoms they gave me, I have reason to believe that it was from foulbrood. From this and other information, I have come to the conclusion that foulbrood existed in this section from the same inciting cause ever since the bee was introduced, though the fact was not brought into public notice. Ignorant bee-keepers may lose all their stocks from this disease and be unaware of the fact—attributing the injury to the inroads of the moth.

R. B. OLDT.

NEW BERLIN, PA.

A northern man who recently emigrated to Jefferson county, in the lower Valley of Virginia, made 1,500 pounds of honey from 59 bee stands last summer, which he sold for $450.

SEND us the names of Bee-keepers, with their Post Office addresss.

AMERICAN BEE JOURNAL.

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True Parthenogenesis in the Honey Bee.

BY PROF. C. T. E. VON SIEBOLD.

Whilst I was occupied with my task of establishing a parthenogenesis in *Psyche Helix* and *Selenobia triquetrella and lichenella*, I did not omit to bring within the limit of my investigations other insects also, of which the story went, that the females were capable of independent reproduction in the virgin state without the assistance of the male individual. It was of importance to look carefully at the honey-bee, upon the reproduction of which the most extraordinary statements have been made at all times by the various bee-keepers. Amongst these statements my attention had already been turned to that remarkable faculty which was ascribed to certain worker-bees, and which was said to consist in their being able to lay eggs capable of development without copulation.* In the year 1851, therefore, I put myself in communication from Breslau with various bee-keepers, and in this way became acquainted with the distinguished apiarian Dzierzon, pastor at Carlsmarkt, near Brieg, in Silesia. By this apiarian, who is gifted with an admirably acute power of observation and free from prejudices, I was furnished partly in letters and partly by word of mouth, with information upon the economy of bees and the most important phenomena of bee-life, of a kind such as I could never have obtained from zoological and entomological works. What surprised me most in these communications, was the entirely new theory of reproduction which Dzierzon had established, with which he then made me acquainted, and by which all the phenomena relating to the process of reproduction in the bees, which so often border upon the marvellous, may be completely explained.

One of these remarkable phenomena is the property just referred to, possessed by some worker-bees of laying eggs capable of development, a property which is denied by no observant bee-keeper, but could not hitherto be satisfactorily explained in any way. The dissection of the worker-bees had shown that they possess undeveloped ovaries, that the seminal receptacle is only imperfectly developed in them, and that, by reason of the abortion of their copulative organs, they are by no means in a condition to copulate with a drone (a male bee) and allow themselves to be fertilized by him. But whence then should this reproductive faculty of certain worker-bees arise? At first I attempted to bring this reproductive power into connection with the Alternation of Generations, and expressed the supposition that similar circumstances might occur among the bees as amongst the aphides; and that consequently amongst the bees individuals were produced at certain times, which, as nurse-like creatures, could produce brood, without fertilization. But if nurses really did occur in the bee-colonies, these must have been recognizable by dissection, as instead of ovaries they would contain germ-stocks, and no trace of a seminal receptacle. I, at the same time, expressed the wish that I might soon have an opportunity given to me of submitting bees which had been ascertained to be fertile workers, to a careful dissection and microscopic examination, in order to decide whether or no they really were nurses.

But when I became acquainted with Dzierzon's theory of the propagation of the bees, and constantly grew more and more convinced of its correctness, it was evident to me that we cannot speak of a nurse-formation amongst the bees. To inform myself as completely as possible about this theory, I went myself to Carlsmarkt and held a conference with Dzierzon on the 26th of July, 1851, in which I opposed all possible doubts to his theory of reproduction; but these were constantly set aside by him, and

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*Hunter in his paper "On Bees," Phil. Trans., 1792, refers to this opinion, but had been unable to confirm it. "It is asserted by Riem that when a hive is deprived of its queen, laborers lay eggs;" * * * and Wilhelm says that it is the laborers only that lay drone-eggs. Hunter then quotes from Schirach: "A young queen lately hatched was put in a hive, which had been previously ascertained to contain no drones. and whose queen was removed; and yet the young bees laid eggs." Upon which he remarks: "There is no mystery in this; but did they hatch?" The definite reply to this question, and the nature of the product of the virgin egg, are amongst the valuable facts established by modern research and observation.

with such convincing reasons which could be brought in accordance both with the anatomical relations of the bees and with the physiological laws of insect and animal life in general, that at last I could no longer hesitate in admitting the correctness of Dzierzon's theory of reproduction.

Dzierzon expressed his views on the theory of the reproduction of bees in the year 1845, in the *Bienenzeitung* of Eichstadt, but without particularly emphasising the most important details of his theory. I consider it necessary to reproduce the views expressed by Dzierzon in that journal, word for word. They run as follows:

"Presupposing what will be referred to and proved in the following numbers, that the queen (female bee) to become good for anything must be fertilized by a drone, (male bee) and that the copulation takes place in the air, I express the conviction, from which all phenomena and mysteries may be perfectly explained, that the drone-eggs do not require fecundation; but that the co-operation of the drone is absolutely necessary when worker-bees are to be produced. Whilst in the higher animals the male is the perfect and ruling creature—the bull keeps together and as it were rules the herd of cattle, and the cock does the same with the hens—the reverse of this takes place with the insects. In the wasps, hornets, humble bees, ants, and especially in the bees, the perfect female forms the central point and holds the swarm together. As even the drones are subordinated to her, they are also in themselves altogether imperfect creatures, for the production of which so many forces and conditions are not necessary even on the part of nature as for the production of the queen, and what is the same thing of the workers. (The ancients even appear to have indicated this by the denomination *fucus.*) The truth of this assertion appears at once from the fact that as everything that is capable of the more difficult and greater effect may also produce the easier and smaller one; so every stock, which is in a condition to produce worker-bees, may also produce drones, when suitable cells are not wanting in the nest; but not inversely. In copulation the ovaries are not fecundated, but the seminal receptacle, that little vesicle which in the young queen is filled with a watery moisture, is saturated with semen, after which it is more clearly distinguishable from its white color. The activity of the ovary in the normal state only commences after copulation, but is not necessarily caused thereby; hence many unfecundated queens lay no eggs at all, whilst others lay drone eggs; and even workers do the latter, although, from their want of a seminal receptacle, I regard them as quite incapable of copulation. I am convinced that such eggs are sufficient for the production of drones, whilst the egg from which a queen or a worker is to be developed must come in contact with the filled seminal receptacle. This is certainly only a hypothesis, and will probably remain so, but one to which every close observer will no more be able to refuse assent, than the hypothesis of Copernicus, that the earth turns round upon its axis, for all the mysterious phenomena in the commonwealth of the bees are very simply explained by it."

In a separate bee-book, Dzierzon subsequently summed up his views upon the reproduction of bees, as a regular theory, in the following manner:

"Therefore, and this must be well borne in mind, in the copulation of the queen, the ovary is not impregnated, but this vesicle or seminal receptacle is penetrated or filled by the male semen. By this, much, nay all of what was enigmatical is solved—especially how the queen can lay fertile eggs in the early spring, when there are no males in the hive. The supply of semen received during copulation is sufficient for her whole life. The copulation takes place once for all. The queen then never flies out again, except when the whole colony removes. When she has begun to lay, we may, without scruple, cut off her wings; she will still remain fertile until her death. But in her youth every queen must have flown out at least once, because the fertilization only takes place in the air; therefore no queen which has been lame in her wings from her birth, can ever be perfectly fertile; I say perfectly fertile, or capable of producing both sexes. For to lay drone eggs, according to my experience, requires no fecundation at all. This is exactly the new and peculiar point in my theory, which I at first only ventured to put forward as a hypothesis, but which has since been completely confirmed. Three young queens with imperfect wings have occurred during the past summer, and these, from the imperfection of their wings, could evidently never have taken the fertilizing flight, and also on dissection proved to be unfecundated, nevertheless laid drone eggs." "By this, all the mysteries which we have hitherto vainly endeavored to unriddle, are completely solved. In the first place the enigma: Why is it that many mothers—they may be either queens or workers in their form—are only capable of propagating the male sex or drones? Because the former are either unfecundated or their fertility is exhausted; the latter, on the other hand, are incapable of fertilization."

"For I am firmly convinced that the egg-laying worker-bees, which occur abnormally, are from the want of a seminal receptacle, just as little capable of being fertilized as the young queen in want of sound wings. Moreover, there is certainly no doubt that by the peculiar tone of her wings the queen allures the drones to her, and disposes them to copulation, of which a worker is of course incapable. In the second place, the before-mentioned power of the fertile queen to lay worker and drone eggs at pleasure, is rendered very easy of explanation by the fact that the drone eggs require no fecundation, but bring the germ of life with them out of the ovary; whilst otherwise it would be inexplicable and incredible. Thus, as it has already been shown that the ovaries are not impregnated, but that the seminal receptacle is filled during copulation, the queen has it in her power to deposite an egg just as it comes from the ovary and as the unfecundated mothers lay it; or by the action of the seminal receptacle, past which it must glide, to invest it with a higher degree, a higher potency of fertility, and awaken in it the germ of a more perfect being, namely, a queen or a worker bee. This of course she does instinctively, induced by the width of the cell to be furnished." "For the production of the females in the bee-hive, therefore, more conditions and forces are necessary than for the production of males or drones. Every mother which is capable of producing worker brood, can also lay drone-eggs, but not inversely."

As was to be expected, these views upon the reproduction of bees called forth the most lively contradictions amongst the bee-keepers. They were attacked with the most violent polemics in the BEE JOURNAL above-mentioned, at the same time, however, that most of the opponents being destitute of any knowledge of the anatomical structure of bees, and of any insight into the physiological import of the sexual functions in insects, laid themselves open so miserably that it must have been an easy matter for Dzierzon to silence them. But as it was almost entirely dilettanti speaking to dilettanti, the dispute never came to an end, the most incorrect, extraordinary, and absurd assertions upon the copulation, fecundation, and oviposition of the bees, &c., being put forward in sober earnest as established truths, without its being observed how completely such views, devised in the fancy of a bee-keeper, were destitute of anything like scientific proof. Hence it was possible that simultaneously with the theory set up by Dzierzon, which its originator sought to support by important new evidence from time to time in the *Bienenzeitung*, questions for investigation and reply were again and again propounded in that journal, upon which we must have long been perfectly clear, since the most important points in the reproduction of the bees had been elucidated by Dzierzon's theory.

Thus in the different years of the *Bienenzeitung* up to the most recent time, (1856,) we find the following questions put forward as not satisfactorily answered, and the following points referred to as doubtful by various bee-keepers: namely, whether the drones are really the male bees; whether the drones might not have the care of the hatching of the eggs; whether the drones are not truly abortions; whether there are not also male worker-bees; whether the queen is not perhaps fertilized by caressing or by mere agitation; whether the copulation between the queen and a drone does not after all take place in the bee-hive, and more of the same kind.

In opposition to these variously contradictory questions, I, as Vice President of the third meeting of German Bee Keepers, held on the second of June, 1852, at Brieg, in Silesia, gave an exposition of the anatomical relations of the three kinds of bees, the drones, the queens, and the workers, and called upon the bee-keepers present to express their objections and doubts against the particular points of the theory established by Dzierzon. This was done on several sides; Dzierzon, who was present as president of the society, defended his assertions with the means which his abundant observations, conceived with a correct understanding, furnished to his hand; whilst I came to his assistance with my observations made with the dissecting needle and the microscope, whenever reference was made to the different anatomical relations and the signification of the internal and external sexual organs of the bees.

Although the majority of the apiarians did not so quickly drop their preconceived notions and incorrect views as to the economy, and especially the reproduction of the bees, yet a constantly increasing number of voices was gradually raised in the *Bienenzeitung*, to confirm the correctness of the individual points in the theory of reproduction put forward by Dzierzon. People began to interest themselves in the anatomical structure of the bees and of insects in general; they took notice of the knowledge obtained in recent times by the microscope, by which a clearer view of the function of the male seminal fluid in the interior of female insects had been gained. To strip everything doubtful from those assertions in Dzierzon's theory which still had too much of the garb of a hypothesis about them, and allow them to appear as naked truths, those apiarians, whose sole object was to get at the truth, took care that various individual bees, the exact examination of whose condition might furnish the right explanation of different doubtful points in Dzierzon's theory, were handed over to practiced entomotomists for dissection and opinion. In this way this theory constantly gained in firmness and form, and became strengthened in such a manner that it may now claim to have taken root in the soil of science, there to await a further development. Great merit in regard to the recognition of Dzierzon's theory is due to Baron Berlepsch, of Seebach, near Langensalza, in Thuringia, as that inteligent and experienced apiarian neither shunned sacrifices, time or trouble to obtain the most important information upon the hotly contested questions relating to the reproduction of bees from his numerous bee-colonies, which are extremely well arranged for observation. In a series of apistical letters,* Berlepsch gave a systematic exposition of the new theory of the reproduction of the bees, and supplied the individual positions with proof supported upon the most arduous experiments, by which he has shown himself to be a distinguished observer and acute naturalist.

It must also be mentioned that Dzierzon deserves to be celebrated as making an era not only in the theory, but also in the practice of bee-keeping. He has, namely, given the bee-hive an arrangement, by which it becomes possible for the bee-keeper not only to follow the observation of the individual bee-colonies, and to check the proceedings of their individual members, or of the foreign intruders of the most exact and certain manner; but also to control and guide the entire economy of the individual hives from all sides. He hit upon the happy idea of causing the bees to build their combs from transverse slats placed loosely behind one another in the upper space of the bee-hive, by which he was enabled as often as he pleased to examine the whole of the combs in a hive one after the other, the interior of the hive being rendered accessible by taking away a movable back or front wall—as by this arrangement each individual comb, clinging from beneath to the loose transverse slat, can be taken out with this, examined on both sides, and again suspended in its place without injury. By the help of this ingenious arrangement, it had become possible not merely to trace what went on in a bee-hive from day to day, or from hour to hour, he could even convince himself most exactly with his own eyes at any time, as to what was taking place in every individual cell in the different combs in his hives. He was also enabled in this way to procure a knowledge of all the proceedings of the workers in the interior of the hive between the combs, and also to witness the doings of the queen bee. These were all advantages which even the celebrated hives with glass walls could not in the least present, as these latter bee-hives only permitted the surface of a single comb, which was turned towards the glass to be inspected, but otherwise allowed only a very small and extremely imperfect insight into the interior of a colony of bees.

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*A translation of the substantial portions of these apistical letters was published in the first volume of the AMERICAN BEE JOURNAL, under the caption of "The Dzierzon Theory."

Dzierzon could give the most exact account of the condition of his bee-hives. He knew the number and the kind of cells which were daily or hourly supplied with eggs by the queen; he knew in what time the larvæ in the eggs arrived at their exclusion; he was enabled to watch the gradual growth of the larvæ; he could exactly ascertain what kind of feed was furnished to this or that larva by the workers; he could acquire the most positive information as to the time of preparation of a bee-larva, as to the period of the escape of the bee from the covered cell, and as to the number and nature of the queen cells; in this way he was always informed in what condition the queen governing a bee-hive was; he could detect every disturbance, every irregularity, which induced by multifarious circumstances, easily occurs in the well-ordered economy of a hive, as quickly as its cause.

What advantages this must have afforded to an apiarian endowed with such an acute and unprejudiced power of observation as Dzierzon, may easily be imagined. By this agency the most important and instructive information regarding the proceedings of a bee colony might flow in upon that acute observer, and it could not but happen that at last the extremely remarkable and concealed process of the reproduction of the bees would be correctly penetrated by the eye of man. But even for practice the Dzierzon bee-hives were of the greatest importance, for Dzierzon could know exactly, at any time, and of any one of his bee-hives, how strongly it was peopled, how industrious its inhabitants were, and what they were occupied with. He could always inform himself whether the number of workers was in proportion to that of the brood produced by the queen, whether the number or presence of drone larvæ was or was not useful to the hive, whether the necessary store of food was present, &c. With all this the intelligent bee-keeper and possessor of Dzierzon hives, by the aid of which a complete insight into the state of each household of bees might be attained, could exercise a correcting and directing action by adding the wanting number of necessary workers to a hive which was poor in workers, or taking away some of the combs filled with eggs and brood from scantily peopled hive, so as to lighten its work, and hanging them in an abundantly peopled hive for further care. The careful bee-keeper now knew from what hives he had to remove the combs filled with drone-larvæ which were either unnecessary or dangerous; he was enabled to save a hive, the inhabitants of which, although otherwise industrious, threatened to become demoralized by the loss of their queen from this dangerous state of anarchy, by taking care to replace this loss where the bees themselves omitted to do so. In short with the assistance of Dzierzon's hives, an experienced and careful bee-keeper may go to work like an intelligent gardener, who, by cutting away the unnecessary roots, and attending properly to the bud-bearing twigs, prepares and supports his trees for the production of a rich harvest of fruit.

In turning to the more exact exposition of Dzierzon's theory of the reproduction of bees, I give prominence to the most important points in the history of their propagation, upon the establishment of which Dzierzon must have laid particular stress, as a number of the proceedings in a bee-hive relating to reproduction can only find their correct explanation and elucidation if we maintain *that the young unfecundated queen never copulates in the bee-hive, but always outside of this, high up in the air.* I pass over the lively dispute which has been carried on amongst bee-keepers from time immemorial for the defence or rejection of this point, and only refer to the fact a queen has never been surprised in the act of copulation within the bee-hive by any apiarian who has obtained an insight into the interior of a hive by the employment of Dzierzon's hives. The drones as long as they remain in the hive are always extremely sluggish insects, which are not even roused from their quietude and phlegm by the proximity of a queen desirous of copulation; on the other hand, when a warm, clear, and still day has allured them out into the open air, the sexual and copulative impulse is awakened in the highest degree in these otherwise sluggish drones. They rove through the genial air high over their hives with a loud humming to attract the attention of a queen, who would be impelled to take her wedding-flight by the same favorable weather. At any rate, very few of the many thousand drones attain the longed-for happiness of being selected and accepted by a queen for a husband, it being well-known that the number of female bees is very small in proportion to the great number of male individuals. But by means of this disproportion, the few female bees on taking their wedding-flight, are always sure of attaining their object, as from the number of drones roving through the air with the same intent, it will not be difficult for a queen to make choice of an agreeable consort.

That the copulation of the bees takes place in the open air, is certainly nothing remarkable, as we see so many other insects perform the act of copulation while flying freely about in the air. It is true that the copulative act is very quickly completed by the bees, and this is proper to all those insects in general, which, with the bees, belong to the order hymenoptera; whilst the males and females of insects of other orders usually remain for days closely united in copulation. For this reason it is one of the rarest events, for even the most observant entomologist to surprise a pair of hymenoptera *in flagranti*. The bee-keepers therefore must not be surprised that the act of copulation in bees has hitherto been so little observed. However, it has accidentally been seen now and then by human eyes, when a pair of bees, united in the act of copulation, dashed down upon the earth from the upper regions of the air. Such isolated observations, information upon which has also been given in the *Bienenzeitung*, are certainly sufficient evidence that the bees copulate outside of the hive.

A still more convincing proof of the occurrence of this act of copulation in the open air is furnished by the appearance and behavior of the fertilized queen on her return from her wedding-flight. The completion of the coitus of such a queen may betray itself even externally; not only does the external orifice of the sexual apparatus, which was kept closed before the wedding-flight stand open, but the torn male copulative organ remains inhering in the vagina, and partly protrudes from it. In order to determine with certainty from its nature what this foreign body, which had often been detected in the vagina of a queen on her return from the wedding-flight really was, Baron von Berlepsch forwarded to me for careful examination on the 21st of July, 1853, one of these queens, from the gaping sexual orifice of which definitely formed parts protruded. The results with which the exact anatomical and microscopical examination of this queen has furnished me, have been given by me in the *Bienenzeitung*, Nov. 26, 1854. By this analysis, I was able to establish, that those definitely formed parts in the vagina of the queen were nothing but the torn copulative organs of a male bee, (drone.) An intimate union of the two sexes of bees must, therefore, have taken place. The remaining behind of torn portions of the male sexual organs in the interior of the female vagina, is, however, a circumstance which occurs not unfrequently in other insects, especially in beetles. With this condition of the external organs of the queen examined by me, the state of the internal generative organs also agreed exactly, for the seminal receptacle (seminal vesicle,) which is empty in all virgin female insects, was in this queen filled to overflowing with spermatozoids (seminal filaments.) This queen, therefore, had returned to her hive certainly fertilized, and would have possessed the power for a long time of effecting the necessary fertilization of the eggs during oviposition with this supply of male semen.

As in the act of copulation of the bees, the penis of a drone is completely protruded outwards, and as no particular muscular apparatus exists for the extension of the penis, the circumstance that the drone only copulates in flight, has an important signification, to which Prof. Leuckart has already called attention. During the movement of the wings, the different air-sacs of the tracheal system of the drone are filled with air, by which means these can act by pressure in the interior of the body of the bee upon the neighboring penis which is to be protruded.

After this single fecundation, a queen-bee can, for a long time, lay male or female eggs *at will*, for by the filling of her seminal receptacle with male semen, she has acquired the power of producing female eggs, whilst before copulation and with an empty seminal capsule, and therefore in the virgin state, she can only lay male eggs.

The second and most important point of the new theory of the reproduction of the bees, is the proposition established by Dzierzon, that "*all eggs which come to maturity in the two ovaries of a queen bee are only of one and the same kind, which, when they are laid without coming in contact with the male semen, become developed into male bees; but, on the contrary, when they are fertilized by male semen, produce female bees.*"

Dzierzon therefore asserts that every egg laid without fertilization by a queen-bee produces a drone, and that every fertilized egg laid by her produces a worker or a queen, according as the larva excluded therefrom is nourished with worker-food or royal-food.

This proposition of Dzierzon's theory necessarily made the greatest noise when it was first announced, and requires above all to be submitted to the closest examination. Before I undertake this examination, I will only remark that one circumstance speaks *a priori* in favor of this proposition of Dzierzon, namely, that by adopting it every phenomenon, however remarkable, in the sexual existence of the bees may be easily explained. But as a time-honored physiological law is at once abolished by this proposition, namely, *that an egg which is to be developed into a male or a female individual must always be fertilized by the male semen*, the affair seems of sufficient importance to be weighed and examined from all sides with the utmost care. I have taken the trouble upon myself and tested Dzierzon's assertion with all the means at my command, by which I have convinced myself in the following way of its correctness.

In the first place, I may appeal to the fact that it is a general occurrence amongst insects, that the females, even when they have not copulated, deposite their mature eggs without fecundation, it is therefore nothing remarkable that a virgin queen deposites eggs. But we must be astonished that these eggs, although unfecundated, do not remain undeveloped; nay, what is more, that only drones or male bees are produced from such eggs. As to the truth of this phenomenon, plenty of observations are adduced by the apiarians, of which I bring forward only as the most convincing example, the drone-productiveness of a virgin queen with imperfect wings. Every observant and experienced bee-keeper knows the ill consequences introduced by the queen-bee which has been excluded with crippled wings, and which has acquired the dominion of a bee-hive. She finds herself prevented from undertaking the wedding-flight, but follows the impulse to oviposition, and supplies worker-cells and drone-cells indiscriminately with unfecundated eggs. These arrive at development, the larvæ excluded from them are provided with nourishment by the workers, they grow up, but all of the same size and the same nature; for they are all drone-larvæ. Those which have grown in worker-cells cannot find room in these, and therefore the workers elevate their narrow cells by subsequent additions so as to obtain room, and in this way produce misshapen combs, or combs with the so-called humped brood (*buckelbrut*).

A very interesting experiment was made by Berlepsch in order to confirm the drone-productiveness of a virgin queen. He contrived the exclusion of queens at the end of September, 1854, and therefore at a time when there were no longer any males; he was lucky enough to keep one of them through the winter, and this produced drone-offspring on the 2d of March, in the following year, furnishing 1,500 cells with humped brood. That this drone-bearing queen had really remained a virgin, was proved by the dissection which Prof. Leuckart executed at the request of Berlepsch.

The true cause of such a drone-productiveness in a bee-hive, however, could only be detected by an apiarian as acute and endowed with such a distinguished power of observation as Dzierzon, whilst up to this time the unfortunate occurrence of an excess of drone-brood in a bee-hive has been quite differently and falsely understood by other bee-keepers. They laid no stress upon the fact that such a hive only contained drone-brood, but they merely wondered that such a hive, governed by a queen with crippled wings contained any brood at all; and they endeavored to explain this phenomenon by the supposition that this unexpected brood could only be produced by a fertilized queen. But as the queen from which this brood was derived had been found to be crippled in the wings, they erred in respect to the affair of copulation, and supposed that this crippled brood-bearing queen was certainly fertilized, and that consequently the act of copulation was effected by the queen-bee within the hive. This erroneous conclusion of course brought in a number of other errors with regard to the signification of particular bee individuals and their functions, by which a correct insight into the process of reproduction in the bees must always have been disturbed. Dzierzon alone did not allow himself to be diverted from the right path in his observations; he maintained that the female bee can only return *fertilized* to her hive after the performance of her wedding flight. He did not, however, content himself with the matter of experience. He went further in his rational way of investigating bee-life. He examined more closely the egg-laying and drone-bearing queens, which, according to his observations, were to be regarded as virgins. He tore away the apex of their abdomen, by which means he succeeded in getting sight of the seminal receptacle, which, in a female bee, is of the size of a pin's head. Dzierzon knew from experience that a fertilized bee in the normal state contains a *milk-white* seminal capsule, which, when crushed, gives issue to the milky seminal fluid. He knew that the empty seminal capsule of a newly excluded virgin queen is not milk-white, but limpid; and he convinced himself that in those drone-bearing queens with crippled wings the seminal capsule was limpid and empty of semen, and consequently in the same state as the seminal capsule of a virgin queen. I have spoken with Dzierzon upon these observations, and as from my own microscopical examination, I was well acquainted with the state of the sexual organs of virgin and fertilized queens, I was thus in a position to judge quite safely, from the description which Dzierzon gave me of his investigations made without a microscope, that he had acquired perfectly correct notions as to the difference in the condition of the sexual organs of a virgin and a fecundated female bee, and therefore could not well have deceived himself in this respect.

Moreover, I felt myself the less inclined to doubt the correctness of these observations of Dzierzon's just reported, as I could not but remember that, according to my own observations, the females of certain *psychidæ* lay unfertilized eggs which are also developed, but inversely, instead of males produce nothing but females. Dzierzon, however, by other observations, furnished me with evidence in favor of his proposition, that drones alone are always produced from unfertilized bees' eggs when they are developed, and that consequently in order to obtain drone-brood, it is not necessary that the queen bee should fertilize the eggs when laying them. As I have already mentioned, it happens now and then in a bee-hive, especially when it has lost its queen, that individual workers lay eggs. This phenomenon has long been known to every experienced bee-keeper; nay, it had already been observed that only drones are developed from these eggs laid by workers; but it is only from the attentive observer, Dzierzon, that we know why such egg-laying workers are always the parents of drones, or, in other words, why only drones are always developed from these eggs produced by workers, if they attain to development. This phenomenon stands in the closest connection with the drone-productiveness of the virgin queen-bees already mentioned.

[TO BE CONTINUED.]

[For the American Bee Journal]

Questions Answered.

In reply to J. L. McCune, Vol. 3, page 58:

Question 1st. *There will.*

Question 2d. I do not believe any person ever had bees work freely on red clover.

J. H. THOMAS,
Breeder of Italian Queens.

BROOKLIN, CANADA.

[Translated for the Bee Journal.]

Development of the Italian Workers.

BY THE BARON OF BERLEPSCH.

On the 22d of May last, Mr. Axthelm, residing here, received an Italian queen bee from Prof. Moua, of Pollegio, and I assisted in preparing a nucleus hive for her reception. We concluded to avail ourselves of the opportunity to observe the process of development of the workers in its various stages, from the hatching of the egg to the perfect maturity of the insect as a honey-gathering bee, and to spare neither time nor trouble in ascertaining and noting the facts with all possible minuteness.

The nucleus was formed in this manner. We took a comb of brood from a very populous colony of black bees, confined the queen thereon in a cage, added a comb containing honey, and four empty combs, supplying some of the cells of one of these partially with water. Having these arranged in the nucleus hive, we brushed off into it all the workers from six frames, allotting the few Italians which accompanied the queen on her journey to a distant colony. Consequently, in the experimental nucleus the queen alone was of the Italian race, the workers being native or black bees.

On the 23d of May, at precisely 7 o'clock in the morning, the queen was liberated, and on the 24th, at 7 a. m., we found twenty-one eggs in the cells of one of the empty combs, but not an egg was found in the brood comb, all the cells of which contained uncapped brood. We had purposely selected such a brood comb, in order to be able to ascertain exactly when the queen would begin to lay eggs.

As already stated, twenty-one eggs were found in the cells precisely twenty-four hours after the queen was liberated. These eggs had in all likelihood been laid very shortly before 7 o'clock on the morning of the 24th, as they were *so few* in number; and it may hence be fairly inferred that a fertile queen, suddenly interrupted in ovipositing, would require nearly twenty-four hours after liberation before her ovaries could resume their function. This queen had been prevented from laying nearly five days during her transit from Pollegio to Coburg. Not a single egg was found in the piece of comb in the transport hive, and it was scarcely possible that it should have contained any, as nearly every cell was stored with honey.

We allowed the queen to pass over on another of the empty combs densely covered with bees, and then set this in the sun that we might see her lay. At thirteen minutes past seven she laid the first egg, and after laying five eggs more before a quarter of eight, we replaced her in the hive and removed the comb containing the twenty-one eggs previously laid. We also brushed off the bees from the other empty comb inserted on the 22d, and removed it from the hive, that we might be positively certain that the oldest egg in the nucleus was laid on the 24th, at thirteen minutes after seven o'clock in the morning.

On the 26th of May, at thirteen minutes after seven in the morning, precisely forty-eight hours later, not one of these eggs was yet hatched. To be certain of this, both the combs containing eggs were lifted out and the bees brushed off, that each of us might carefully examine them. Again, at thirteen minutes past twelve at noon, at thirteen minutes past three in the afternoon, and at thirteen minutes past seven in the evening, not a larva was yet disclosed. But on the morning of the 27th, at thirteen minutes past five o'clock, sixty-nine eggs were hatched. Thus larvæ were dislosed from sixty-nine eggs in the interval between sixty-one and seventy hours. I do not say in from sixty-one to seventy hours, because at fifteen minutes past seven o'clock on the morning of the 24th only six eggs had been layed.

This corresponded with an experiment I made in 1859, but was in direct contravention of what Gundelach alleges, (in his Supplement, page 23,) that the larva emerges from the egg in twenty-four hours. Hundreds of observations have taught the incorrectness of this statement.

On the 3d of June, at thirteen minutes past five o'clock in the morning, six days accordingly after the hatching of the eggs, not one cell was yet sealed up, though it was evident that arrangements for sealing up were in several instances being made, as the inner margins of some of the cells were obviously broadened. At noon two of the cells were already so nearly sealed over that only a small central hole was still perceptible. At thirteen minutes past five o'clock in the evening nine cells were completely closed. It was thus found that in six and a half days after the hatching of the eggs the first cells were sealed over. This harmonizes essentially with one of my experiments made in 1859, and with those of Gundelach as detailed in his Treatise in 1842 and in his Supplement in 1852, but directly contradicts the statement of Huber, who assigns five days as the term that the larva remains unsealed in the cell.

On the 11th of June, at thirteen minutes past seven in the morning, precisely eighteen days after the hatching of the eggs, none of the brood had yet emerged, though the appearance of the cappings on the comb first supplied with eggs showed plainly that many young bees were nearly mature. At twelve o'clock, noon, and also at three o'clock in the afternoon, no bees had yet left their cells. But when we renewed the examination at thirteen minutes past seven in the evening, we had the great gratification of seeing that two bees had just cut through the caps of their cells and were about to emerge. In a minute later both were *born*.

It was thus ascertained that an Italian worker may be maturely developed *in eighteen days, twelve hours, and about one minute.* At thirteen minutes past eight o'clock in the evening, just before dusk, we re-examined the hive, and found that six bees had left their cells. On the 12th of June, at thirteen minutes past seven in the morning, precisely nineteen days after the first egg was laid, at least two hundred and fifty bees had emerged. It was thus further ascertained that, in the summer season, the Italian worker does not ordinarily require *nineteen full days* for its perfect development.

From the 12th of June forward the hive was closely observed, daily, between the hours of twelve at noon and three o'clock in the afternoon. On the 16th, on the fifth day accordingly, (counting from June 11th fourteen minutes after 7 o'clock in the evening, when the first two bees were born,) no Italian bee had yet shown itself outside of the hive. As on the 17th and 18th the thermometer fell to 60°, so that, though the locust trees were then in full bloom, very few old bees left their hives, we feared that we should find our experiment partially defeated when warm weather recurred on the 19th. For if Italian workers were seen to issue in numbers on that day, as the eighth, it would not follow, as a matter of course, that they do not leave their hive till on the eighth day after emerging from the cell, because the cold weather experienced on the sixth and seventh days (June 17 and 18) may have prevented them from making their appearance. But to our great joy, our apprehensions proved unfounded, for on the 19th, the eighth day, only a single Italian bee presented herself on the alighting-board, without attempting, however, to leave it, but soon retreated into the hive again, though the thermometer, at the moment of her appearance, (three minutes past 1 o'clock,) stood at 72°.

On the 20th, the ninth day consequently, we saw only four Italian bees leave the hive hovering in its front, and speedily returning. The thermometer stood at 72° in the shade. But on the 21st of June—or on the 10th day—when the thermometer stood at 78°, the Italian bees flew sparingly, and in increased numbers not before the 22d.

This result is quite remarkable, and does not accord with any previous experiments. Thus:

1. Besides the utterly abortive experiment which I made in 1856, I made three new and very precise ones in 1864–6, which uniformly indicated the *eighth* day as that on which the young bees first made their appearance in considerable numbers in front of their hives, though a few showed themselves on the *seventh* day, on the alighting board, but retired again without attempting to fly. Earlier than on the seventh day, I have never seen young bees leave their hives, although, besides the experiments now referred to, I have made observations in forty or fifty instances.

2. Mr. Kalb, who assisted me in the previous experiments, can corroborate the statement that not a bee left the hive prior to the seventh day; and Mr. Hopf, who, in 1864 and 1865, Italianized at least sixty stocks of black bees, informs me that "*before the seventh day no young bee leaves the hive.*"

3. Dr. Dönhoff distinctly mentions the *seventh* day as that on which the young bees first left his experimental hive.

4. Dzierzon says "after leaving the cell, a week passes (*seven* days) before one or more young Italian bees will make their appearance before the hive while the bees are flying." This agrees precisely with the statements under 1 and 3. In his treatise on "Rational Bee Culture," he says more vaguely "*several* days;" and it would seem as if he wished to reduce the period within seven days, thus approximating one his earlier statements, according to which the young bees made their first appearance outside "about the third day."

5. Bottner, in the *Bienenzeitung* for 1864, page 138, says "at least *six* days."

6. Wittenhagen, in the *Bienenzeitung* for 1866, page 48, says: "In about *eight* days the young bees become strong enough to venture to leave their hives on a warm, calm day, to discharge their fæces."

7. The Novice, of Coblentz, (*Bienenzeitung*, 1864, page 188,) says: "I once saw young bees fly out on the *fourth* day;" and Fisher makes a similar statement in the *Bienenzeitung* for 1863, page 31. Decidedly as these statements differ from mine, I will not undertake to discredit them, because the assertion is direct and positive, and both the Novice and Mr. Fisher are accurate observers. In such cases much depends on by whom the observation is made. Many observers are very superficial, drawing hasty conclusions, without noting the facts carefully, or preserving well-ascertained data for future use. Only too frequently are surmises and conjectures substituted for facts, and conclusions deduced from insufficient premises.

8. Schiller, (*Bienenzeitung*, 1861, page 98,) says "the workers fly out the day after they are born, for purification, and thenceforward regularly in quest of pasturage, *which needs no proof.*" No experienced observer would make any such statement. A bee not more than twenty-four hours old, cannot fly at all, but drops to the ground almost perpendicularly, if thrown into the air.

So far as I know no further statement in this connection has appeared in the *Bienenzeitung*, for what Prachel says (B. Z., 1855, page 123,) is too vague to be of use.

I can say very positively that in my last experiment, the young bees first began to fly out on the *tenth* day. How is this to be explained, in view of my own previous observations and those of others? I will hazard these surmises:

1. The nucleus colony was weak, and the hive disproportionately large. Hence the bees were not crowded, nor could a high internal temperature be maintained; and the influence of warmth on the activity of bees is very well known.

2. The queen had laid an unusual number of eggs. Hence, on the 18th and 19th of June, when the young bees should have come forth, the brood-combs were not densely covered; and on the 18th the weather was too cold to allow bees to fly.

On the 23d of June, the twelfth day after the birth of the oldest of the young bees, and thenceforward, Mr. Axthelm and myself watched the hive with the most scrutinizing attention, relieving each other like soldiers on guard. But it was not till the 30th, between 1 and 2 o'clock in the afternoon, consequently on the 19th day, that we first saw young Italians bringing in *pollen*—three then came laden with pellets. The weather was highly favorable from the 23d to the 30th inclusive, and the locust trees were in full bloom, yielding honey in abundance.

Nevertheless we could not find any young Italians bringing in *honey* till the 30th, though we examined about twenty individuals daily during that time. Only on the first of July a considerable number of Italians brought in *pollen* and *honey*. Hence, leaving out of account the three pollen-bearing bees seen in the 30th, the young Italians first began to gather honey and pollen from the surrounding pasturage on the twentieth day after their birth.

This result, also, does not correspond with any previously obtained.

1. In my three previous experiments, the young bees frequented the pasturage on the *sixteenth* day.
2. Mr. Hopf assured me that in his apiary the *sixteenth* day always proved to be the first on which the young bees went honey-gathering.
3. According to Dr. Dönhoff, (*Bienenzeitung*, 1855, page 163,) the bees first gathered honey and pollen on the *nineteenth* day.
4. Bottner saw a few young bees bringing in honey and pollen on the *twelfth* day, but not in numbers till on the *thirteenth* and *fourteenth*.
5. The Novice of Coblentz found a few young bees bringing in pollen on the *twelfth* day, but usually not before the *fourteenth*.
6. Fisher once saw young bees bringing in pollen on the *tenth* day.
7. Count Stosch states (B. Z., 1860, page 278,) "a bee must be at least *two* weeks old before she goes out foraging." On page 285, he names the *sixteenth* day.
8. When Schiller says that it requires no further proof that the bees fly out for purification the day after they are born, and thenceforward regularly in quest of pasturage, it only requires no further proof to show that he is a poor observer.
9. Wittenhagen remarks that "at the average age of *fourteen* days the bees commence regular labor."
10. Dzierzon's casual statements relating to this point, are too vague to be taken into account.

According to the foregoing, I conceive that for the present, and until better advised, we may assume that ordinarily the bee leaves for foraging on the sixteenth day. From this, according to locality, some important practical considerations follow. In most sections of the country the supply of pasturage fails prior to the 10th of August—that is, after that date hives rarely increase in weight. Now, if we assume *nineteen days* as the term required in summer for the perfect development of a worker bee from the egg till it leaves the cell, *thirty-five days* elapse before it becomes a perfectly active honey-gathering insect. Consequently in such a district, all the eggs laid after the sixth of July will produce bees that cannot aid in any productive labor in that year. Hence the truly intelligent rational bee keeper should diligently endeavor to have only as many workers bred after the twenty-fourth of June, as will suffice to keep the hive populous enough for wintering well.

It is important to know at what age precisely bees ordinarily commence active labors. I would, therefore, request the correspondents of the *Bienenzeitung* who desire to advance rational bee-culture, to institute numerous and exact observations next year, so as to elucidate this subject more fully.

Practice, unless based at all points on correct theory—or, if I may so express it, practice that is not truly *applied theory*, is mere bee-keeping relying on *good luck*. Correct practice can only emanate from correct theory; and he who is either too dull or too indolent to study the theory so as to comprehend it clearly and be able to apply it, may *keep* bees, but knows nothing of bee *culture*. The more clearly theory in all the minutest details is evolved and developed, the more definite and precise will the practice become, and the less necessary will it be to propound rules. He who is thoroughly grounded in the theory will always know how best to proceed in practice; whereas he that is wholly or partially unacquainted with the theory will scarcely ever know how to proceed, though he be furnished with a volume of empirical instructions.

For the American Bee Journal.

Italian Bees.

Doctors differ quite as much in relation to Italian bees as sick patients. It is true that in most respects all agree that the *pure* Italian bees are superior to the natives, but all depends on their purity; and here is where the "difference comes in." One dealer in Italian bees says "the workers are distinguished from the natives by a yellow band around the abdomen;" another says "three yellow bands or rings;" a third makes the markings of the queen a test of purity; a fourth tests the purity of a queen by her progeny; and a fifth makes the very amiable disposition of the workers, or the "impeccability of temper," a test of purity. A person entirely unacquainted with Italian bees, after hearing the different opinions of these doctors, if he purchased a queen purity guaranteed, would hardly know where to look for a reliable test. In fact, will these different parties who are engaged in the sale of queens purity guaranteed, forward another if the progeny of a queen sold does not come fully up to their own standard? For instance, suppose a queen is purchased of a party claiming that the queen progeny of a pure queen should be duplicates of the mother, and the purchaser finds in rearing queens artificially early in the spring or late in the fall, that they differ very much in color, will another queen be forwarded? Or will the purchaser learn for the first time that the queen is not expected to duplicate herself except in the swarming season? Again, suppose a queen is purchased of a party claiming three yellow bands as a test, and her workers do not *all* show three yellow bands, will the purchaser be supplied with another, or will he be told that it is only when the bees are young and the abdomen distended, that the three yellow bands can be seen? And if so, is this the fact? One writer for the AMERICAN BEE JOURNAL claims that they should show three yellow bands under all circumstances, whether old or young, abdomen distended or contracted. Which is correct? Again, suppose a queen is purchased of a vendor of these one-banded d——ls and her workers do not *all* show plainly even one yellow band, will another queen be sent? Or will the buyer be coolly informed that the Italians are a variety of the common bee, and are liable to "*strike back to the original type;*" that "my bees have *improved* since I purchased them, and must be pure?"

Now, dear JOURNAL, is there not considerable, if not more, humbug about this Italian bee business? Are not purchasers semi-occasionally, if not oftener, victimized in purchasing queens? It so seems and *feels* to me to the tune of the first cost of the queens, the loss of a hundred dollars' worth of surplus honey estimated, and the time and trouble of hybridizing an apiary, to say nothing of the extra stings. As I am a novice in *pure* Italian bee-keeping, I do not propose to enter into the present discussion in relation to these various tests of purity, but hope it will be continued until some standard of purity is established, upon which all parties can agree. It has been seven years, I think, since they were first brought to the United States—quite long enough for somebody to have learned something about Italian bees.

VICTIM.

[For the American Bee Journal.]

Overstocking.

There are often too many bees kept together. I got more honey from forty old stands last season than I ever got from two hundred; and bees carried away, when I had many at home, did better.

There never will be bees enough to get all the honey, or to rob the air of the fragrance that exhales from opening bloom. But honey secretes faster than it exhales, and the success of bees depends on the amount of surplus. If there are so many bees that they find nine out of ten places already rifled, and the tenth with only a small supply from having been recently visited, much of that little will be needed to repair the wear and tear of collection, as the bees lose the greater part of their time and labor in flying from place to place examining empty blossoms.

If there are so few bees that they find three-fourths of the flowers they visit supplied with a good accumulation of honey, more will be obtained in less time and with less labor, and a smaller proportion will be needed to sustain the laboring bees.

A small apiary will therefore afford more honey in proportion than a large one.

LEMONT, ILL. T. H. MINER.

P. S.—The dearth here is severe. Bees doing poorly. More honey in proportion to combs and bees than usual.

AN Iowa bee-keeper travelling through that State recently, remarks: "A few Italian stocks which I chanced to find, worked busily on the flowers of the great Western prairie. I counted twenty-six varieties of flowers visited only by the Italian bees."

[For the American Bee Journal.]

Purity of Italian Queens.

It appears from a foreign paper in my possession that Mr. John Lowe, of Edinburgh, with a view to test the Dzierzon theory, set to work to obtain hybrids between *apis mellifica* and *apis ligustica*, and also between *apis mellifica* and *apis fasciata*. The result of his experiments, which I give in his own words, was "that Ligurian queen-bees fertilized by English drones, and Egyptian queen-bees fertilized by English drones, both produced drones, which, as well as the workers, were hybrid in their characters and bore unmistakeable evidence of the influence of the male parent." From this Mr. Lowe drew the conclusion "that the eggs of a queen-bee which has been fertilized by a drone of another race, whether they develope into drones or workers, are in some way affected by the act of fecundation, and that both sexes of the progeny partake of the paternal and maternal character of the parents or race, from which it follows that Dzierzon's is not the true theory of reproduction in the honey-bee."

Now while I fully endorse the conclusion arrived at by Mr. Lowe, "that drones are in some way affected by the act of fecundation," yet I cannot say with him that the Dzierzon theory "is not the true theory of reproduction in the honey-bee." I fail to see that the Dzierzon theory is materially crippled by the fact of the drones being *in some way* affected by the act of fecundation. The pith of the Dzierzon theory is that all the eggs in the ovaries of the queen-bee are unimpregnated; that the eggs which produce workers are impregnated when passing through the oviduct by coming in contact with a sperm reservoir and receiving a minute portion of its contents, while the eggs that produce drones pass the sperm reservoir without coming in contact with it, and hence are not impregnated. This may be true, and still it may be a fact that drone eggs are *in some way* affected by the act of fecundation. But the deduction generally drawn from the Dzierzon theory that drones are therefore *pure*, cannot be strictly true, if a queen has mated with a drone of another race. Neither is Mr. Lowe correct in saying that such drones are hybrid in their character. The truth lies between the two extremes. Mr. Lowe has simply discovered what others had discovered before him, namely, that drones are *in some way* affected by the act of fecundation. He does not attempt to explain that "some way," but jumps at the conclusion that they are hybrid. I will, therefore, for the benefit of the honest breeder of Italian queens, explain how drones are affected by the act of fecundation. The truth is that the whole system of the queen-bee is affected or changed by the act of coition. In other words the life-giving principle received from the drone by the queen into the sperm reservoir is also, by absorption and circulation, carried through the whole system and becomes a part of her very nature, and hence is transmitted to her progeny. It will then at once be seen that if a pure Italian queen cohabits with a black drone, her eggs, which are a part of herself, will partake to a certain extent of the nature of the drone. Therefore, her drone progeny, although not hybrids, will show unmistakeable evidence of the influence of the male parent. Not only so, but the eggs of a queen are affected by the impregnation that produced herself. In other words, the impregnation of an egg does not end with the production of a queen-bee, but through her system is transmitted to her eggs sufficient to cause them to produce drones. In this way we can without difficulty account for the production of drones from the egg of an unimpregnated queen.

If breeders of Italian queens will accept and acknowledge the above truths, there is an end to the discussion of the purity and non-purity of the "three-banded," "two-banded," and "one-banded" bees. For it must be clearly seen that if queens to the third and fourth generation continue to mate or cohabit with drones produced from a queen that has mated with a common drone, their progenies, though not hybrids, will show the influence of the black race by the number of bands, some of the bees losing one and perhaps two bands. Hybrid bees not only lose *one* and *two*, but even the three bands, appearing as black as the native bees—showing the Italian blood, however, in the shape of the abdomen, which is more pointed than that of the black.

In order, then, to improve the purity (if I may be allowed the expression) of our Italian bees, it is only necessary for breeders of Italian queens to destroy all drones produced by what we call hybrid queens, or queens that have mated with common drones, allowing their queens to cohabit only with drones produced by queens that mated with an Italian drone. This every honest breeder will endeavor to do when purity of race is desired.

But while speaking of the purity of Italian bees, I must say that I fail to see that Professor Varro's "impeccability of temper" and A. J. Root's "breathing" process are of any value in testing the purity of Italian bees, for two reasons. *First*, neither test is needed, or of any avail in proving their purity. *Second*, both are liable to failure. It must be at once conceded that impeccability of temper, or a disposition to bear being breathed upon belongs only to three-banded bees; and as a hybrid queen never produces a full colony of such, therefore three-banded bees are pure, and no further test is needed. Again, there are times when Professor Varro's bees will be found wanting impeccability of temper. If not when operated upon by himself, they will when operated upon by some other person, the effluvium of whose body shall not be so acceptable as that of his own. Nothing can be more certain than that some persons are far more likely to be stung than others. I think my Italians pure, but I find them quite too ready to sting, yet not so much inclined to do so as the natives or the hybrids. If Professor Varro or any other person has Italian bees that will not sting me, let them set their own price and they shall have it.

J. H. THOMAS.

BROOKLIN, ONTARIO.

[For the American Bee Journal.]

Wintering Bees in the Ground.

MR. EDITOR: In response to the inquiry of W. T. in your September number, page 58, I would say that low and uniform temperature, dryness, darkness, tranquility, security against mice, and slow renewal of air, are conditions required for wintering bees in the ground. I use the mode which experience has proved successful.

In well drained sloping ground, I dig a ditch half a foot deeper than my hives are tall, and one foot wider than they are broad. I drain that ditch for greater security. If fearing the falling in of the earth, I stay the ground with some old planks. Then I lay in the bottom two 4x4 inch beams. Upon these I place my hives, having previously raised them from their bottom boards by inserting strips of half inch laths. I remove top-boxes and leave open all the holes in the honey-boards, in order to give the bees plenty of air. Then with plaisterer's laths I frame pipes or flues, the longer ones descending to within four or five inches of the bottom; the shorter ones to be placed in the roof. I place one of these flues at each end of the ditch, and another after each third hive—alternating a long and a short one. Finally, I prepare a support for a double-sloping roof of old boards; and then cover the roof with straw nearly a foot high, and place on that a layer of earth equally thick—making together eighteen or twenty inches.

By these means bees are maintained in a low temperature, and remain dormant for months, consuming little honey; and are all alive and active in the spring.

This is the best way to preserve feeble and poorly supplied stocks.

Last year I wintered some third swarms in the ground, giving them honey in boxes, which remained untouched—the small quantity of honey they had in their hives, having been sufficient for their support.

I came from France four years ago, and am my own instructor. I shall receive the *French Bee Journal* and will translate for you such articles as I may deem serviceable to bee-keepers in my new country.

CHARLES DADANT.

HAMILTON, ILL.

[For the American Bee Journal.]

MR. EDITOR: Referring you and the readers of the "JOURNAL" to my former article, (see BEE JOURNAL, Vol. 3, No 4, pages 63 and 64,) I propose, after relating a further experiment in bee-culture, to give the result of such experience during the bee season just now closed.

On April 1, 1867, after careful examination, I found that out of thirteen colonies of the fall of 1866, I had eight in fair condition, two quite weak and light, and four dead ones, or rather the remnants thereof. On April 14th, I discovered that one of my weak colonies was being robbed by one of my strongest. On this I at once removed the colony that was being robbed from its stand, opened and examined it, and finding a healthy looking and fertile queen, with some brood and stores, I removed the robbing colony to the stand of the robbed one, and placed the robbed colony on the stand of the robbing one. After a few minutes the bees became quiet, the robbing ceased, and both colonies did well from that day forward. This expedient in this instance proved to be the very best that I ever tried or ever saw tried to prevent robbing. Whether it will prove effectual or not in other cases, trial and time alone will determine.

My further experiments during the past spring, are stated in brief in my former article. I may remark here, however, that in each case where I started an artificial colony, using a sealed queen cell as a basis, I used a full comb containing honey, brood, &c., in which I inserted the queen cell. I also remark that during the present season, I started and built up from the nine original colonies which I had on the 1st of April last, eighteen full colonies of bees, with an abundance of stores for wintering, and have taken surplus, which was deposited in top boxes, about 175 pounds

All increase of colonies after my experiment of April 28th, heretofore alluded to, was effected by using a sealed queen cell and one or more full combs of honey, brood, &c., placed in an empty hive and giving it the place of a full colony which was overstocked with bees. In no instance did I resort to either drumming or the use of smoke.

I invite no controversy, but do invite information as heretofore, for which see my former article. In other words, if any reader of the JOURNAL has succeeded better than I have in the increase of full colonies, amount of surplus stores, and above all, in securing uniform straight combs, I should be pleased to learn how it was done.

BELMONT.

Crystalization of Honey.

I have several times seen it stated in the *Scientific American* and elsewhere, that the crystalization of honey is caused by the action of light. In opposition to this theory allow me to present two facts. We frequently take up honey late in the season, (in November and December,) place on tin pans and set them on shelves in the cellar. Some of the honey, of course, leaks out of the cells, and in a few weeks will be found crystalized in the bottom of the pans. Yet no light enters the cellar from the time we bank the house in October till some time in March.

Again, our strained honey we put in jars, and after replacing the covers, set them in a dark closet where no light enters. In the spring the honey that remains unsold or unused, will be found completely "candied." In my opinion exposure to the air and cold have more to do with the crystalization of honey than light.—J. L. W. in *Scientific American*.

☞SEND us names of bee-keepers with Post Office address.

[For the American Bee Journal.]

Several Points Considered.

1. A writer asks on page 58, volume 3, of the BEE JOURNAL, "Has any one not raising queens for sale ever had bees to work freely on red clover?" I am not raising queens; have none for sale, but have repeatedly seen Italian bees working freely on red clover. I consider the insinuation contained in the question unjust. I have a hybrid stock from a black queen that collected light colored honey last August, while pure black stocks were gathering freely from buckwheat a very dark colored honey. I do not know the source of the light honey, but suspect it was from red clover.

2. Another writer on page 50, volume 3, of the BEE JOURNAL, heads an article "A singular case." I think the case a plain one. The colony referred to had a superannuated queen; that is, a queen whose stock of spermatozoa was nearly expended, causing her to lay many unimpregnated or drone eggs. The instinct of the bees led them, under these circumstances, to supersede her with a young queen at the earliest moment in the season, which they did by raising a queen from one of her *few* worker eggs. You will find an account in the last May or June number of the JOURNAL of a similar proceeding as early as February 28; but this was in a warmer latitude, namely, in Kentucky. I am inclined to think from these two observed cases, that aged queens are often thus superseded, and at so early a period in the season that the fertilization of the young queen is difficult and often impossible; and hence the loss of colonies late in the spring that have passed the winter successfully. I think it would be an advantage to allow no queen to remain in an apiary longer than two years. Kill them as soon as the honey harvest is over, or sooner, and let the bees raise new ones while drones are abundant. Of course it would be necessary to watch such hives as are deprived of their queens to prevent robbing, and to be sure that they obtained fertile young queens. A still better way would be to raise the queens in nucleus boxes.

3. Mr. A. J. Root, page 53, volume 3, of the BEE JOURNAL, gives a pretty good result from a colony of Italian bees, and calls for more figures in regard to common bees this season. Here are some A double swarm of black bees hived June 28 in an empty hive; that is, without any old comb to assist them, filled the lower part of a two-story glass Langstroth hive, holding twelve frames, and deposited about seventy-five pounds of surplus honey in the second story, entirely free from brood and bee-bread, and mostly sealed over. Another double swarm of black bees hived July 1st, gave me thirty-six pounds of honey, besides handsomely filling thirteen frames for their own use in the body of the hive. The hybrid swarm mentioned above, aslo hived July 1st, did just as well as the last mentioned double black swarm, viz: filled thirteen frames and furnished six boxes of surplus honey, weighing thirty-six pounds. Four other black swarms hived the same day,

all filled the body of their hives, thirteen frames, but yielded no surplus. They were small swarms None of them had any old combs given to them, for I had none to give. I would have paid a dollar a sheet for perfect empty combs for their use, and would have made money by the operation. The only swarm I had last year, hybrids, gave me this year twenty dollars worth of surplus honey; and one swarm forced July 24th, has completely filled its thirteen frames, and, I believe, would have produced considerable surplus honey if boxes had been given to it. Yet, notwithstanding such success with black bees, I intend to Italianize my apiary next season.

4. From an inspection of the combs in all my hives, I find a "general rule" of irregularity in comb-building, namely, the five or six central combs are invariably straight and within the frames. Outside of those, on each side, they are inclined to curve towards the middle of the hive, and sometimes cross from one frame to another near the ends of the frames. In the spring of the year, after the combs become hardened with age, and are comparatively empty of honey, it is not a difficult matter to rectify all this by straightening all the combs. To do it, remove the hive from its stand, and set an empty hive, (presuming that all your hives are of the same size, as they ought certainly to be), in its place. Take out all the straight combs from the central part, and set them carefully in their own order in the empty hive with all the adhering bees. We come now, perhaps, to two frames joined together with comb. Cut away the comb carefully from the frame to which it is least attached; remove the frame, brush off the bees into or in front of the hive, being careful in all the operations not to injure the queen (there is in fact no necessity for injuring a single bee); lay the frame on a board or table, and with a knife crowd the comb into the frame just where you want it. This is best done, not by laying the knife on the comb and pushing, but by placing the knife between the comb and frame, and prying it into place gradually. A common table knife is best. If the comb is built too thick in certain places, as is often the case, slice it off to the proper thickness with a *hot* knife, heated by holding it for a moment against a *hot* flat-iron. Draw the knife rapidly through the comb, and it will not bruise a single cell. Heat it again as often as it cools. You will be surprised to see how nicely even a dull knife will cut under the circumstances, if you have never tried it before. I think, however, that a very simple expedient will secure all straight combs. I have never tried it, for I have never had the meens at hand. In fact, it has occurred to me only since seeing the combs built in my hives this summer. I raise the back end of the hives three or four inches higher than the front, while the combs are building. As above stated, several combs situated centrally are invariably straight. The irregularity begins towards each side of the hive. Now my idea is to place in the hive before hiving the swarm, two straight combs, one at each point where the curved combs usually begin, say at one-third of the width of the hive from each side. This would divide the hive into three equal parts or spaces, each so narrow that the bees would hardly have room to deviate from the straight line enough to carry one comb across two frames. Will some one who has spare straight combs try this next year, and report the result?

R. Bickford.

Seneca Falls, N. Y., Oct. 7, 1867.

Correspondence of the Bee Journal.

ITALIAN BEES IN THEIR NATIVE HOME.

LETTER FROM MR. ADAM GRIMM.

Bellinzona, (Canton Tessin,)
September 12, 1867.

On my arrival on the European continent on the night of the 27th of August, I concluded to visit Mr. Dathe, at Eystrup, near Hanover, who is well-known as an expert and successful cultivator of Italian bees. My purpose was first to compare the Italian bees and queens which I had brought with me across the ocean with those of Mr. Dathe; secondly, to visit the heaths of Luneburg that I might personally examine the bee-stations there; and thirdly, to ascertain whether the Italian bees there reared are less disposed to sting than their native black bees—conceiving that I should thus enjoy the best opportunity to form a correct judgment on this point. On arriving at his residence I found Mr. Dathe so much occupied in sending off queens, that he requested me to call again next day, when he expected to be more at leisure. On the following morning he called for me at the hotel, and I accompanied him to his house, where I opened the two nucleus hives I had brought with me, and gave the bees an opportunity to fly. Very few workers had died on the voyage; but I had the mortification to see one of the queens, which I was showing to Mr. Dathe on the comb, suddenly take wing and leave for parts unknown. After minute inspection Mr. Dathe declared that my workers and queens were fully equal to his own. He remarked further that I would not obtain equally handsome queens and workers from Professor Mona; though he by no means intended that the remark should imply that Prof. M.'s bees were not of the pure Italian race. Mr. Dathe then kindly showed me his arrangements for queen-raising and several unfertilized young queens. I found these all of a beautiful yellow color, there not being a dark or brown sh one among them. After close comparison I could perceive no difference between his bees and my own. In reply to my question whether all the young queens produced were uniformly of the same color as the mother, he said that such was by no means the case. He, however, had a queen last year, from which he reared a hundred yellow young queens before he obtained a dark one, and that one was nearly black; but that I might calculate on finding nearly one-half of Prof. Mona's queens dark. We then proceeded to his heath apiary, situated at a distance of not more than 1½ miles. I found there about one hundred colonies, mostly in Dzierzon movable comb hives, though there were among them a few colonies in common straw hives—these having been bought by Mr. Dathe from some of his neighbors. This, he said, became necessary, as he had sold nearly all his old stocks last spring. So long as we were in the vicinity of Italian stocks, we were very little annoyed by the bees; but when we approached the black bees at the heath apiary, I was repeatedly stung, though I was equipped with a bee-cap, and I then removed to a respectful distance. Mr. Dathe said that he uses a bee-cap when working among his bees, and this was especially necessary when his black bees were at work on the blooming heather, as they were then peculiarly ill-tempered. Only too soon did I become convinced of the correctness of this remark. We went to visit another heath apiary only a mile further off, and while we were yet about ten rods distant, the bees attacked us. We nevertheless advanced to count the hives and inspect their interior arrangement. There were 174 stocks placed in a square, facing the cardinal points, set in two tiers with the hives not more than six inches apart. The whole was inclosed with boards, and the hives were of straw. Their size was about 1,600 cubic inches, and their diameter at the base about twelve inches. They seemed for the most part well filled, and the bees were hanging out in large clusters. Mr. Dathe remarked that the pasturage on the heaths this year was particularly plentiful. When I compare the deportment of these bees with that of my own, among which I can pass and repass daily without bee-cap or other protection, unattacked and unannoyed if I simply let them alone, I am no longer surprised that Dzierzon and other distinguished European apiarians declare that the Italian is much more docile than the German or common black bee. But I have had in my own apiary some black bees as docile as the Italians. I was, indeed, stung by bees of either race, but not more proportionally than the Rev. Mr. Langstroth was when I visited him two years ago, and we opened a large number of hives together. But to seat myself on the frames of a stocked hive of Italians, I should only venture to do after being protected in the rear by an ample application of Prof. Flanders' celebrated *bee-charm!*

After a long and agreeable interview with Mr. Dathe, I departed fully satisfied that he is one of the best practical apiarians. His little treatise on Italianizing common stocks, surpasses in brevity, thoroughness, and comprehensiveness, every work of the kind I have ever read. I have obtained his permission to publish a translation of the pamphlet, but whether it will be done, is among the uncertainties of the future.

From here I went to Bavaria to visit my parents, and thence to Bellinzona, Canton Tessin, the present residence of Professor Mona, where I arrived on the evening of the 11th of September. I may remark here that while crossing the St. Bernard, I made constant inquiry about bees, and found the last of the black race at Zising. A stage of four hours brought us to Splugen, where I was told there are no bees, the climate being too cold and rough for them. After another stage of four hours we reached the summit of the road across the Alps at this pass, and saw a peak elevated only about 300 feet higher, covered with perpetual snow. Though the conductor told us that this was one of the warmest days he had ever known in crossing, I found it cold enough to make an overcoat comfortable. Vegetation was sparse at the foot of the mountain and along the road-sides; and I am well convinced that no swarm of bees ever voluntarily passed across this mountain chain. After a brief detention on the highest point, we began to descend, and in five hours reached Bellinzona, situated about three miles from Lago Maggiore.

This morning Prof. Mona called on me at the hotel, to conduct me to his apiary, and in five minutes I had the gratification to see the Italian bees in their native home. Professor Mona's assistant, Mr. Uhle, a German from Hanover, immediately opened several populous hives, and showed me a beautiful yellow queen, and also a darker one with only some narrow yellow bands, but whose workers were as highly colored and as fully marked as those of the brighter queen. On my remarking that the darker queen would be pronounced impure in Germany, Prof. Mona and Mr. Uhle laughed and said the yellow queens were the exception, the darker ones having the normal hue; and assured me that their customers in Austria preferred and ordered the darker queens, alleging that they are hardier and more prolific. In Germany, however, the brighter queens are preferred, though he was himself of the impression that these are really not so hardy or long-lived as the darker. When I told Prof. Mona that some American bee-keepers contend that the genuine Italian queens are of a brownish color with the point of the abdomen black; and that others maintain that all the daughters must be duplicates of their mothers; he advised me to invite them to a personal examination of the Italian bees in their native land, the Canton Tessin and the adjoining Italian districts, and he was persuaded they would candidly admit their error. When I observed that some German apiarians alleged that the Italian bees were not altogether pure, even in their native land, but that there too black bees were occasionally found, he offered to carry me around among the neighboring farmers in a circuit of several leagues, and promised to give me a dozen queens if I succeeded in finding a single living black bee in all their stocks. I accepted the offer, rather from curiosity than from any expectation of success. Between nine o'clock in the morning and ten in the evening we visited a number of apiaries and examined the bees, without detecting the least variation in color or finding a single black bee. We found, indeed, a few apparently superannuated workers which seemed at first view to have only two yellow bands, but on closer inspection it was evident that the third had merely changed to a dark brown hue. In reply to a remark that my own Italian bees were much brighter-colored, with the third yellow band of greater breadth, he said the circumstance was simply the effect of food and climate; that his bees also, when carried up the Alps during the summer, assumed a brighter color. I then told him that the workers produced by a queen obtained from the Rev. Mr. Langstroth, were not near so handsome as those from queens I subsequently reared from her brood; and that I ascribed their brighter color to the fine honey of the linden trees on which they subsisted almost exclusively. He expressed his entire concurrence in that view of the matter.

I again visited Prof. Mona on the 13th of September; saw how he prepared his queen nuclei for transportation; and examined the arrangement of the hives in which he sent off entire colonies. I must confess that I could not conceive of any mode better adapted to the purpose than that which he employs. I had the curiosity to inquire how many queens he sent off in the course of the year. He replied that this year the number would exceed two thousand. I was permitted to examine his account-book and found that he had filled nearly two hundred orders, prior to the first of April The queens forwarded went to the several transalpine Cantons of Switzerland, to all the German States, to Hungary, France, and England. The orders are annually increasing in number. He showed me several letters just received, one of which ordered fourteen queens; another contained this remark: "My Italian stocks are very heavy, and all my common stocks, save two very populous ones, are light. Send me six more queens."

In the afternoon we visited the apiary of a Catholic priest, about a league from Bellinzona. We were kindly received, and when Professor Mona presented me as an American bee-keeper who desired to see his bees, he brought out a bottle of the finest wine I ever tasted to treat us. Learning in the course of conversation that I had about six hundred hives, he said that he had about two hundred, nearly all of which were distributed among the farmers of the neighborhood, who attended to them for half the profits. Here, too, I noticed at one of his hives several seemingly very old bees which were nearly black, but on close examination I could distinctly trace the faint remains of the originally yellow bands, which had now assumed a dark brown hue. The young bees had, without an exception, the three yellow bands. After this we visited another apiary, being the twelfth. I had already, on the first day, inquired of Mr. Uhle whether he was not occasionally stung by the Italian bees. He replied that this frequently happened, when he was opening queenless stocks, or colonies having only queen cells or an unimpregnated queen. He then requested me to notice and count the stings he might receive, as they affected him so little that he paid no attention to them, though never using a bee-cap. I must say that the Italian bees here seemed to me to be remarkably docile, though the heather and buckwheat were in full bloom—more docile indeed than my own in Wisconsin; and in the course of these two days, I was stung by them only once, though continually passing and repassing the fronts of their hives, and frequently taking up handfuls of bees.

Prof. Mona has principally movable comb-hives in his apiaries, but among the farmers every variety of ordinary hives are met with, both of straw and wood. The hives commonly used here seemed to me to be very small, in comparison with my own, containing only from 1,200 to 1,800 cubic inches; but the most of them were very heavy. Bee pasturage here is of long continuance, though not abundant at any one period.

The system of queen-raising adopted by Prof. Mona, appears to me to be efficacious indeed, but very slow. At the risk of being considered a boaster, I would say that if I had naught else to attend to I would rear as many queens in two months, as Prof. Mona and his assistant do in the entire summer.

Having now seen the bees of the Rev. Mr. Langstroth, at Oxford, Ohio, of Mr Richard Colvin, in Baltimore, Md., of Mr. G Dathe, at Eystrup, in Hanover, and those of Prof. Mona, and of the farmers in his neighborhood, and carefully compared the queens, I think I may claim to be qualified to form an opinion respecting Italian bees and queens. It struck me both last year and during the past summer that precisely those of my colonies which had particularly bright yellow workers, were on the average less productive in swarms and honey, than those with workers darker colored; and swarms from these yellow colonies, moreover, issued later than those from darker colonies and hybrid stocks. And I incline to coincide in opinion with Mr. Dathe, who, in the pamphlet already referred to, remarks that "very yellow queens are more delicate than those of a browner hue." Prof. Mona is of the same opinion. It seems to me, therefore, that those bee-keepers who desire to introduce the Italian race in their apiaries, not for the beauty of the bees, but for their greater productiveness, would do well to give preference to the darker hued, which are most esteemed in their native land. Though duly appreciating beauty, I should still greatly prefer a colony of pale yellow or dark colored bees that yielded me twenty pounds more of surplus honey, to a much handsomer but less productive yellow one. On the whole, I conceive we should more efficiently promote bee-culture, if instead of making it an object to rear beautiful yellow bees, we aimed at propagating from and multiplying the more industrious and most productive. For dairy purposes we certainly prefer raising calves from superior milch cows than from inferior milkers; and should not the same principle be applicable, with like advantage, in bee-culture? Would it not be practicable to improve the race of bees, whether black or yellow, by judicious selection in breeding? More than forty years ago, Ramdohr, a distinguished German apiarian, observed that colonies were frequently met with, which, with their progeny, greatly excelled others in industry and productiveness; and he advised that such colonies should be preserved and bred from.

In conclusion, I would state that Prof. Mona has appointed me his sole agent in the United States, for the sale of Italian queens reared at his apiaries; and I hope to be able to effect arrangements in Bremen and New York, by which those who desire to obtain queens from the parent country of the *apis ligustica*, can be supplied directly from abroad on the most reasonable terms. I enclose an advertisement of Prof. Mona, and likewise a certificate from under his hand, that I have purchased from him one hundred Italian queen bees of undoubted purity. These I desire to have inserted. They will be followed in due time with a price current and further particulars.

Yours respectfully,

Adam Grimm.

[From the Canada Farmer.]

Alsike Clover.

I had a small field of three and a half acres that I had summer-fallowed, and subsequently took a crop of fall wheat from it in the autumn of 1865. In the following spring I plowed it once and sowed to spring wheat, and seeded it down to alsike clover, putting on only five pounds of seed to the acre, harrowed in with the last harrowing. I should state that the field has had no manure since it was cleared, some eight or ten years ago. The clover germinated and came up well; and last fall I pastured it very lightly. In the spring of the present year, about the 20th of May, I sowed a barrel and a half of plaster on the field, and now I am cutting and securing the crop for seed. I have five good size wagon loads in the barn, and there are fifteen or sixteen more in the field. The average length of the stalks is about two and a half feet; but in some of the hollows it is as high as four and a half feet. Of course it was all down in one tangled mass, and it occupied eight long days for one man to mow it. It appears to be extremely prolific in seed. I think it would have been better to have pastured it till the first of June for a seed crop, as it would not then have grown so tall or been so badly laid.

In regard to its adaptation for bee pasturage, I find it excellent. During about four weeks it produced a multitude of blossoms, and the bees literally covered them from morning till night. Out of curiosity on the 24th of June, I drove out a common sized swarm of bees into a hive filled with empty comb, and having weighed them set them in one corner of the clover field. After the lapse of a week I weighed them again, and found that they had gained twenty-seven pounds. This additional weight was of course all honey, for there was no comb to build, nor could there have been any weight of brood in that short interval of time.

Honey may be clarified by placing the vessel containing it in hot water, and continuing to skim as long as any scum rises.

Bees usually work more from eight o'clock in the morning till noon, than during the rest of the day.

For the American Bee Journal.

Bee-Hives.

I have been much amused in reading the remarks on bee-hives in the Journal; so, to amuse others, I return the compliment by sending the article below, taken from the *Rural New Yorker*. It was written in 1861, by "Abram Mudgett, of Great Valley, N. Y." I hope Mr. Mudgett "still lives," and that the Editor will mail him a copy of the Journal containing the republication of the article, as I am not willing to deal with any one "behind his back."

I wish Mr. M. would let us hear from him through the Journal, with regard to his birch-bark hive; and especially whether his combs still remain "white," and particularly whether he still continues in the "tame mink" business, since many in the West are anxious to get possession of something that will destroy the moth-worm. Now for the article:

"A NO-PATENT HIVE.

Having seen models of different bee-hives in your valuable paper, I will introduce one for the benefit of bee-keepers, which is superior to any other in use. It is made of birch bark, and costs about five cents. My experience with this hive is five years. The comb remains white; it has grown no darker for the last three years; the bees winter on less honey, swarm earlier, and have one-third more wax. As the hive can be made to hold water, there is no hiding-place for the miller, although I have no millers about my apiary, as I keep tame minks, which exterminate them. I have kept from twenty to one hundred swarms for the last thirty years, and consider the birch hive, and the minks to catch the millers the *two most* important discoveries to bee-keepers that I have made in that time."

This birch-bark hive will doubtless please many readers of the Journal, so far as *cheapness* is concerned. Just think of it, only "five cents" for a good substantial hive that keeps the combs "white," and is in short "superior to any other in use!"

M. M. Baldridge,

St. Charles, Ill.

[From the Iowa Homestead]

How I Wintered Bees in the Langstroth Hive.

I placed them side by side within two inches of the ground, drove stakes in the ground, and put in shingles and old boards, so as to leave a space of two or three inches all around the hive, except in front, (which was left open). This space I filled with straw; the honey box and honey-boards were taken off, and the caps filled with straw. My bees wintered in excellent condition, and consumed, I judge, a comparatively small amount of honey.

S. P. Snow.

THE AMERICAN BEE JOURNAL.

WASHINGTON, NOVEMBER, 1867.

☞ THE AMERICAN BEE JOURNAL is now published monthly, in the City of Washington, (D. C.,) at $2 per annum. All communications should be addressed to the Editor, at that place.

The revived discussion of the question whether the drones are, in any respect, affected by the fertilization of the queen bee producing them, has induced us to republish from Prof. Von Siebold's treatise on "*True Parthenogenesis in Bees and Butterflies*," that portion which relates to the reproduction of bees. The work was translated and published in England ten years ago, and a few copies have reached this country; but not having been reprinted here, the portion most interesting to them is not generally accessible to American apiarians. The article will occupy three or four pages in three consecutive numbers of the JOURNAL, and cannot fail to be instructive to inquirers.

Dzierzon, it will be seen, was the first to notice the phenomena which have also attracted the attention of apiarians in this country; and was, in consequence of his manner of treating them, charged with abandoning one of the chief points of his own theory. But Prof. Siebold conceives that the matter is susceptible of an explanation in no wise militating against that theory.

No *facts* have yet been adduced which we can regard as necessarily contravening the doctrine that fertilization is not needed for, and does not influence the production of drones; or as at all conflicting with the views expressed on page 175 of the second volume of the BEE JOURNAL.

[For the American Bee Journal.]

"Woe be them Attic dapsterlings what writ
Them sassy 'pistles, with them plenty wit,
As dabbles 'bout them gums 'thout sides 'round it!
There's many a grins in lots o' scribblin' fiz,
Since 'talian flies gets piur, an bugs is riz."—Ignus Fatuus.

MR. EDITOR: Among the many futile attempts which have been made of late years, with a view to improve inventions which enlightened minds have hitherto considered perfect, none are more conspicuous and ludicrous than those pertaining to the culture of the honey bee. Extraordinary as has been the intelligential skill, wasted upon investigations innumerable as the stars in the azure vault above, in the fruitless attempt to discover how the human mind reasons, there is yet this to recommend the pursuit of the abstract sciences that they furnish fruitful themes of healthful, mental exercise, during hours of recreation, which could, in rainy weather, be not more usefully employed.

You may say Hobbes, "the man of a hundred heads," was *right* in demonstrating that there was no difference between right and wrong, yet you cannot say the same of the inventor of a bee hive who has never become proof against the sting of the bee. You may say Locke, Descartes, and Malebranche were *right*, had they proved to you that the human *mind* is impressed upon mule skin, yet you cannot say the same of the inventor of a bee hive whose *absence of mind* is stamped upon every part of his invention. And you may excuse David Hume even who *believed* that there was no *belief*, yet you cannot thus excuse the inventor of a bee hive who *believes* that everybody *believes* there is no *belief* as perfect as his own.

Simplicity being the first predicate of perfection, it follows that complicated bee hives are a nuisance. Porosity, lightness, and warmth being the three prerequisites of a perfect material for a bee hive, it follows that in the absence of corktrunks we have to rely on straw and porous wood; and now since the durability of these has become objectionable on account of their negative qualities in these respects, perforated sheet iron, tin, and zinc, and cast iron, with the addition, perhaps, of steel and platina, bid fair to take the lead as articles, per excellence, in the construction of all *perfect hives*, excepting the only good for nothing, old fashioned, ugly-looking, ill-shaped, bee-killing, honey-producing "cracked old kittle," which cost Prof. W. A. Flanders & Co., and "smaller 'taties," such an immense amount of lungs, cash, and literary efforts, to reclaim from the inevitable doom of oblivion.

But, Mr. Editor, my purpose was not to be seduced by a subject so fascinating, for I have got a bee hive of light, durable, airy material and construction, which I have been so fortunate as to invent, through the instrumentality of Prof. Flanders' *invaluable* "Bee Charm." (See BEE JOURNAL volume 2d, pp. 186, 206.) There is no patent obtainable upon it, and therefore, my dear Mr. BEE JOURNAL, I would like to secure your assistance in the perpetuation of another impeachable good upon all who are in favor of getting the cheapest, bestest, and most handiest bee hive in these United States and all America besides. I've got a whole book of Greek and Latin quotations all ready for any emergency, and if I should not succeed in my laudable enterprise, I will send the book to any editor, of good standing, with one of my immovable, immortal, and immaculate bee hives, free gratis for nothing at all, except a puff or two in his county paper.

Meanwhile, I shall remain, as before, respectfully, your super-prolix apiloquax,

Prof. APIASTER ALSATIUS, A. M.,
Corresponding Secretary of Coon Island
Golden Apiary, 12½ miles from shore.

☞ There's lots of folks what think them there tin skips of mine more better as any they was used to.

[For the American Bee Journal.]

Experience of a Novice.

No. 8.

MY ONE EXCEPTION TO ARTIFICIAL SWARMING.

Those of my readers who have followed me thus far may recollect that in my first attempts at queen-raising I finally removed my Italian queen from her hive (which hive was the Langstroth I had so carefully made from the book), and that I succeeded in getting quite a number of queen-cells.

Well, as the Italians had built queen-cells so readily, and, most of all, were so much quieter and easier to handle than my black bees, I concluded to keep them at the business. Accordingly I used all the cells and gave them fresh brood to raise more. This time I left them one cell; but, strange to say, they clung to the young queen, and killed her almost as soon as hatched.

Well, "my beauties," thinks I, I will have to try once more; and I gave them a whole frame of brood to encourage them to keep up their spirits for ten days more. In eight days and twenty hours, according to a memorandum kept at the time, I opened the hives to count my queen-cells. I found them all torn open, and on looking further found the largest queen I have ever seen—"a young giantess," as some one has expressed it. The bees were then working on the blossoms of the basswood—a coincidence with the case of the great number of queen-cells raised on one occasion by Mr Grimm, as stated in the Bee Journal, Vol. 2, page 170

In a few days more I found that she had almost filled the combs with eggs, which hatched in due time. The bees proved to be hybrids. As our fall last year afforded no pasturage, it took nearly all of their honey to raise the brood; and in November they were nearly destitute. I treated them to twenty pounds of sugar syrup with the rest of my stock, and did not see my "tall" queen again till the warm weather in February. Then I found her filling her combs with eggs at a great rate, and some days after found quite a quantity of larvæ and immature brood in front of the hive. I let it pass, however, supposing some of the brood had got chilled and were carried out by the bees.

Toward the last of March, on opening the hive I could not find a particle of brood, and scarcely any honey, and the bees much dwindled down. I had no Langstroth frame containing any honey; but near by stood and American hive that had died out from being too old, as mentioned before. I now saw the inconvenience of having two kinds in an apiary. The American was nearly full, but I could not exchange the frames; so I decided on what I then considered a bold experiment, as it was pretty cold weather at the time. I put the American hive in place of theirs, and brushed them off, "giantess" and all, nearly starved and stupid with cold, into the cold hive, picked up those that fell on the ground, tumbled them in and left them to do the best they could. But towards evening, feeling some remorse about the rough manner in which I had treated them, I ventured to look in upon them, and found that they had so far recovered as to remember that they were *hybrids*, and objected to any further assistance. Still I managed to get a peep at "giantess" and the preparations they had made for housekeeping with the benefit of plentiful supplies.

After that, as they had become quite weak, I decided to let them build up as fast as they liked; and when I began to take frames from the rest to raise queens, my wife bade me let the one with the large queen alone and see how strong they would get, as she had doubts of "my policy" in artificial swarming, &c.

Towards June they seemed pretty strong, but had not got their combs quite down, and had not clustered out any; yet, for fear they might swarm, I did remove a comb from the centre.

Two days after this, it being necessary for my wife to be away, I requested a neighbor's wife to watch and inform me at the store, which was not far off, if my bees should swarm. Sure enough, about ten o'clock, she came in out of breath to tell me they had swarmed. Contrary to all known rule and regulation, they had not waited to cluster or anything of the kind, but poured out of the hive "pell-mell," as if Old Nick himself was after them; hurried up into the air, and off in a northeasterly direction—the largest swarm that had ever been seen, as all agreed.

Of course it was "giantess" on the rampage. I had been thinking of clipping her wings only that very morning, and now she was gone. In despair I seized my hat and set off in the direction indicated; but only succeeded in learning that they had been seen to pass over a certain house, perhaps twenty rods, from my apiary. Resolving that I would get them yet, if within the bounds of possibility, I returned home to make examinations

I found the hive almost entirely destitute of bees, but every cell filled with brood and honey; even the frame I had given them, partly filled with empty comb, was full nearly to the bottom, and the outside frames solid with sealed honey. But, strange to tell, not a queen-cell in any stage was to be seen, and scarcely bees enough to build one, as it then seemed.

Perhaps it may be as well now to follow the fortunes of this hive to the end, as the novelists say, if my readers will allow the digression. I have always had much trouble with my young queens, just before or about the time they began to lay. One in particular, I used to expect to find clustered with her quart of bees on some neighboring tree in spite of brood, larvæ, or eggs, almost every evening when I came home. Well, just the Sunday morning previous to the event narrated, as I was enjoying the cool air in the garden among my bees, with rather a disregard to habiliments, that is, without hat, coat, or shoes, I was surprised to hear faintly the peculiar hum of swarming bees, and just caught sight of my would-be truant nucleus going over the fence. As its queen was a fine one, I started in pursuit, seizing my bee-hat and a queen cage on the way. Over the fences and gardens we went, across several streets, presenting rather a queer sight to the good people on their way to church, and only stopped at a friend's apiary, some twenty rods or more off (the very one before mentioned), who was just hiving a swarm of black bees, with which my miniature swarm seemed desirous of forming a partnership. (*Query*—Could my bees have heard the swarm coming out at that distance, or was it merely accidental?) I stationed myself at the entrance of the new hive, and as her majesty made her appearance, I prevailed on her to enter the queen-cage, and carried her back home—a part of her subjects being loyal enough to follow. On the way home, I bethought me of an expedient to make her stay—strange I had not thought of it before—"clipping her wings," namely. I had tried the seven-sixteenths of an inch arrangement, but where the bees passed through, the queen had managed to go also, as had been the case that very morning. I accordingly got the scissors and clipped one wing; and to make assurance doubly sure, thought I would clip the other wing also. This seemed to cut rather hard, but I did make it come; when, behold, I had cut off a foreleg too, which she had thrust between the blades in the insane attempt to save her wing. She was put back, and staid at home at least until the opening of our story. When I found that the deserted hive had no queen-cell, I went immediately for the clipped queen; but she too had caught the fever and gone. If she had no wings she had feet, at least a part of them, and as she could do no better, had gone *on foot*. By watching the few remaining bees that remained around the small hive or box, I actually saw them follow on her track, when I found her nearly half way across the garden, surrounded by her remaining subjects. From the manner in which they followed her trail, I think that she must have left a peculiar scent along the ground she had traversed.

She was caged again and given to the swarm, or rather the hive where the swarm was; and as the few bees left did not seem hostile at all, she was released after a short time, and I supposed all was right. But after a week or more, finding them queenless, with a large number of queen-cells started, I concluded that either they had killed her, thinking they could raise a better looking one, or that she had taken another fancy to a pedestrian exploration. My wife suggested that if I had not clipped her wings on *Sunday*, she might have proved more profitable.

I am really afraid that that truant swarm will have to stay away until another month, or something valuable may be crowded out of the Bee Journal, to give room for the long article from Novice.

☞In the article in the Journal for last month, page 65, second column, in the 18th line from the bottom, the word "improve" should be "impure."

To unite Bees in the Fall.

I alarm the bees in both hives which I wish to unite, then leave them a few movements to fill themselves with honey, I then put one of them over an empty hive, (my hives have movable bottoms), take each frame out, and shake or brush the bees into the hive below. When all are out, set the other in its place, and proceed in the same way. The bees all brushed together thus in an empty hive, are too much frightened to quarrel. I then arrange all my frames containing honey in one hive, and set it over the one in which the bees are. They all go up rapidy and take possession of the frames like the colony. One of the queens will, of course, be killed; and hence, if you have any choice between them, search for the one you least care for, and destroy her.

Every empty comb should be saved. Indeed no piece of good worker-comb should ever be melted for wax. It is worth five dollars a pound in honey boxes, or fastened into the frames for the use of the bees.—Mrs. E. S. Tupper, *in Iowa Homestead.*

[For the American Bee Journal.]

A Profitable Apiary.

Silas Way, of this county, is one of our best bee-keepers. He has now two hundred and thirty hives of bees—all natives. He wintered over one hundred and twenty-five colonies, and from them had nearly two hundred natural swarms. Many were consolidated, and the whole number of swarms were put into one hundred and five hives. His crop of honey in small boxes amounts to nearly two tons, which he is selling at thirty cents per pound. He has one hundred and twenty-five colonies in the the improved Langstroth hive; the remainder in box hives. The shallow form of this hive is his preference, as he claims that he can get more surplus honey from low broad hives than from tall ones. From eighteen Langstroth hives that did not swarm, he has secured 1,080 pounds box honey—sixty pounds, worth eighteen dollars, per hive. Mr. Way loses no bees in winter. They are wintered in a dry dark cellar, directly under the living room of his house. His greatest difficulty has been to find room enough in the tops of his hives for the accommodation of the bees that store surplus honey. He has a plan now that he thinks will obviate this difficulty. The inside depth of the comb-frame that he uses is 9½ inches; but he purposes to make one hundred more this winter, with frames only 8½ inches in the clear. This change will give him more room for boxes, and with two sets he thinks he may be able to give his bees all the room they can use to advantage. He thinks he can get by this arrangement, coupled with good management, 100 pounds surplus honey from any good hive of bees that is kept from swarming, provided the season is an average one for this latitude. On his box hives he uses two honey-boxes; but on the Langstroth hive he can use three of the same size. He claims that the three boxes on frame hives are filled with honey as soon as the two on box hives. Mr. Way does not *work the frames* at all; in fact, pays no more attention to frame hives than to box hives. Still, he finds it for his interest to use them. His hives are made in the simplest and cheapest way that he can devise, and do not cost him to exceed two dollars per hive complete, with one set of boxes. They are all planed and painted, and present a fine appearance.

RECAPITULATION.

APIARY.	DR.
To 125 hives of bees, at $8 each, including hives. - - - - -	$1,000
10 per cent. interest on capital. - -	100
	$1,100
APIARY.	CR.
By 230 hives of bees, including hives, at $8 each. - - - - - - - -	$1,840
4,000 pounds of honey @ 30 cents. -	1,200
	$3,040
PROFITS,	$1,940.

The exact yield of surplus honey is not known, but the above amount is not far out of the way. If materially wrong, I hope he will correct the mistake.
M. M. BALDRIDGE.
ST. CHARLES, ILL.

[For the American Bee Journal.]

Melilot Clover—No. 2.

Melilot clover came into blossom this year early in July. For a few days in August there were no blossoms—about ten days in all. This is the first season that the plant failed, in fair weather, to give a supply of honey for a single day after it began to bloom. About the middle of August a fresh supply of blossoms made their appearance. Since that time the plant has been constantly in full bloom; and to-day, (Oct. 15), the supply of blossoms is as large as at any other time this season. In fact, the plant is literally white with blossoms, and is visited as freely by the bees as one could wish. The past three days have been warm and pleasant, being fine weather for the bees to work. There is not a doubt but the plant will remain in bloom till winter sets in, although we are having a serious drouth—the worst we have had for many years. Pastures are nearly ruined for present feeding; and many farmers, and others, have been obliged to fodder their stock. Many kinds of weeds are "dried up," that usually are green and vigorous at this season of the year. We are therefore much encouraged with regard to the value of Melilot clover for bee pasturage in seasons of *drouth*. We have also had some frosts, but, as stated in my former article, they do not injure the blossoms of this clover. In this respect Melilot clover is as hardy as what are known as the "frost flowers" of the prairies.

I have now some *fresh* seed that I will mail, in small parcels, to all applicants on receipt of a few stamps for postage and putting up. The seed may be sown any month of the year.
M. M. BALDRIDGE.
ST. CHARLES, ILL.

[For the American Bee Journal.]

Northwestern Bee-Keepers' Association.

MEETING HELD ON THE IOWA STATE FAIR GROUNDS.

Notice was given out during the Iowa State Fair, that there would be a meeting of bee-keepers on Friday afternoon, October 4th, and those interested in bee-culture were invited to be present.

Much interest was manifested in the movement, and about 150 bee-keepers were present at the meeting. An organization was perfected, entitled "THE NORTHWESTERN BEE-KEEPERS' ASSOCIATION."

The following were elected as officers of the association:

R. R. MURPHY, Fulton, Ills., President,
DAVID HESS, Lyons, Iowa, Vice President,
M. M. BALDRIDGE, St. Charles, Ills., Sect'y,
H. A. RODGERS, Treasurer.

COMMITTEE ON CONSTITUTION.

J. Bullard, Evansville, Wis., M. M. Baldridge, and James M. Marvin, of St. Charles, Illinois.

The main object of the meeting was to organize. There were many questions asked and answered with regard to bees; but no notes were taken of these proceedings. The AMERICAN BEE JOURNAL was highly endorsed by its readers present, and all bee-keepers were advised to become its subscribers and supporters. A request was made that these notes be sent to the AMERICAN BEE JOURNAL and other periodicals friendly to the association, for publication.

The meeting then adjourned, subject to the call of the Secretary. Should the State Fair be held on the same grounds the ensuing year, there will doubtless be another meeting at the time of the Fair. Notice will be given in the BEE JOURNAL and other papers, when the matter is decided. Meantime the Secretary invites correspondence, with suggestions as to the time and place of holding the next meeting. It may be advisable to have a session next spring. The Secretary would be pleased to receive the names and post office address of those who desire to become members of this association.

M. M. BALDRIDGE,
Secretary.
ST. CHARLES, ILLS.

The queen bee is the soul of the colony. No bee-keeper should undertake to winter a queenless colony. It is inevitably doomed to destruction, and all efforts to carry it through the winter in that condition are bootless—involving a waste of honey, and a misapplication of time and labor. Unite the bees in the fall with some other colony, and fumigate the combs with brimstone, to preserve them for the use of early swarms next spring.

☞SEND us names of bee-keepers with Post Office address.

AMERICAN BEE JOURNAL.

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Parthenogenesis in the Honey Bee.

BY PROF. C. T. E. VON SIEBOLD.

[CONTINUED.]

It was ascertained anatomically by Mademoiselle Jurine, that the worker bees are nothing but female bees whose sexual organs are aborted. By careful dissection the ovarian tubes not perfectly developed may be exhibited in all workers, connected with an undeveloped oviduct. I have already shown in the year 1843, that in all workers there is connected with this undeveloped oviduct, an appendage which perfectly represents the seminal receptacle of queens. On this appendage I could discover the seminal duct, the seminal capsule, and the two appendicular glands, with their common efferent duct in the workers; but all these separate parts of the seminal receptacle were in a very undeveloped state.

In what follows I will endeavor to explain by what cause the ovarian tubes, which in the normally-formed workers always remain empty, may become exceptionally filled with eggs in certain workers. It is well known to apiarians that in hives which have suddenly lost their queen, the workers, if they wish to put themselves in possession of a new queen, select some worker-cells *furnished with an egg or a young larva*, and enlarge these into royal cells, (queen's cradles) and that they do not then bring up the larvæ which are excluded from the eggs already laid in these former worker-cells, or which were found in them already excluded in such cells, with the ordinary worker-food, but furnish them with royal-food, as indeed all the eggs deposited by a fertilized queen in worker-cells are of one kind, namely, female. But in order that the female sexual organs of such a larva may acquire their development, the larva must receive royal-food; if, on the contrary, the female sexual organs are to remain undeveloped for the advantage of the organs of the worker-bee destined for work, this object is attained by the administration of worker-food. I leave it undecided in what the distinction between worker and royal food consists; for the apiarians have hitherto been at variance, as to whether the larvæ of workers and queens received the same food, but the latter in greater quantity; or whether the queen's food differs from that of the workers not only in its quantity, but also in its quality. From Leuckart's recent investigations, however, it appears that there is really a qualitative difference between the two kinds of food. The larvæ destined to become workers only receive the paste prepared by the workers in their digestive organs during the first days of their life, whilst in the latter days of their larval existence they are fed with pollen and honey. The queen-larvæ on the contrary, are supplied with the above paste during their whole larval existence. Leuckart found the first traces of the internal genital organs in the female larvæ of six days old. It is exactly at this time that the change of food takes place in the worker-larvæ, which, up to this period, are nourished just like the queen-larvæ with the same paste. In this way we get an explanation of the circumstance which has been observed by most experienced apiarians, that a female larva does not require the usage of a queen from its earliest period to become perfectly sexual, but that worker-larvæ, even several (six or seven) days old, may also be reared to queens, when their narrow cells are subsequently enlarged, and they are abundantly supplied with royal-paste instead of with worker's food, (pollen and honey).

If, then, it is certain that a worker-bee or a queen may be reared indifferently from every larva of a worker-cell derived from a fecundated queen, the case may probably occur in one bee-hive or another, that by some confusion or disturbance in the regular distribution of the food, some of the royal food falls to the lot of one or several worker-larvæ in the neighborhood of a queen's cell, into which royal food is carried, by which their sexual organs are more or less developed. By this influence the development of the female genitalia may have been abnormally elevated in a worker up to the power of laying true eggs. Such egg-laying workers, however, always remain unfecundated; they do not feel like perfect female bees, and undertake no wedding-flight; which, indeed, would be of no use to them, as the development of their copulative and fecundative organs has not kept pace with that of their ovaries and oviducts. The external sexual organs, as well as the seminal receptacle, remain abortive in these egg-laying workers, for which reason they are not in a condition to copulate and receive fertilizing semen. They will, therefore, only be able to lay unfecundated eggs, from which, if they actually arrive at development, only male bees (drones) are produced, no matter whether they were laid in worker-cells or drone-cells. The cause of the production of an excess of drones and humped-brood comb in a queenless hive is, therefore, that as regards the nature of her deposited eggs, an egg-laying worker-bee is in exactly the same position as an egg-laying virgin queen—both can only be the parents of drones.

Why the egg-laying workers can only lay unfertilized eggs, I have already explained in my letter to the Baron of Berlepsch. At that time, indeed, I had not been enabled to dissect an egg-laying worker-bee; so that the principal proof of the correctness of my views as to the drone-productiveness of the workers still had to be obtained. This proof Baron von Berlepsch has since furnished by dissecting a worker-bee which was laying drone-eggs, and finding therein a small ovary with about eight pretty well developed eggs, but no seminal receptacle. He did not content himself with this investigation of his own, but in order to make the unbelieving apiarians more inclined to accept the truth, he also called in the assistance of an entomotomist. At the request of Berlepsch, Leuckart, of Giessen, dissected at Seebach two workers taken in the act of laying eggs, of which, unfortunately, one individual as Leuckart reported, was no longer in good condition; but on the other hand, in the second individual he was able to prepare the sexual apparatus with its different parts in connection, and to recognize the egg-laying bee from its construction at first glance. On the right side he found six, and on the left five, ovarian tubes, with single mature eggs. The single oviduct, as Leuckart said, was without appendages. In the first-mentioned egg-laying worker also, Leuckart could detect no seminal receptacle, although this structure is still distinctly recognizable in the queens, even when the other entrails are almost entirely dissolved by decomposition. I must here recall the fact that, as I have already mentioned, the seminal receptacle is not entirely wanting in the workers, but that it remains undeveloped in them, and may be detected as a small appendage to the oviduct by a close microscopical examination. Leuckart overlooked this appendage in the egg-laying bees examined by him, but has convinced himself, as he himself admits, by subsequent investigations of the presence of the rudimentary seminal receptacle in worker bees. At any rate, it appears from the investigations of Berlepsch and Leuckart, that in the egg-laying workers dissected by them, the seminal receptacle was not present in the same degree of development as in the queen-bee, as in its perfectly developed state it is visible even to the naked eye, of the size of a pin's head, and consequently could not have escaped the notice of those two observers.

Another cause of drone-productiveness in a bee-hive may also be explained consistently with Dzierzon's theory. Thus in certain, but undoubtedly very rare cases it happens that fertilized queens in advanced age, towards the end of their vital activity, become drone-bearing, after showing themselves to be normal up to that period, as regards the production of drones, females, and workers. Normal fertilized queens, therefore, in course of time lose the faculty of producing workers and females The brood deposited by such old queens can only be reared to male bees—certainly, according to Dzierzon's theory, for the self-evident reason that the store of semen in the seminal receptacle of a fertilized queen is gradually exhausted. As a queen only undertakes the wedding-flight once in her life, and fertilizes many thousands of eggs destined for the worker-cells for several consecutive years, with semen received by a single act of copulation,* although one or two spermatozoids of the male semen are employed in the fecundation of one egg, yet the seminal mass will at last be used up, and at the same time the old queen will lose the faculty of laying the required number of fertilized eggs.

From the circumstances hitherto described, it will be evident how a queen, which has not been fertilized, or an old queen, or an egg-laying worker, must act injuriously upon a colony of bees. They constantly cause confusion in a hive, as they only produce lazy drones, and cannot, from inability to produce new workers, replace the loss of workers, to which every bee-hive is exposed. On the other hand, a colony of bees which rejoices in the possession of a vigorous fertilized queen will thrive well, as the drones, the workers, and the queens required for the emigration of young swarms, are produced by her at the right time, and in the proper proportions as to number, for which purpose the workers prepare and arrange the necessary drone-cells, worker-cells, and queen-cells.

Dzierzon's theory also includes the assertion that every normally organized queen must at the same time possess the power of *laying male or female eggs at will; that is to say, of leaving an egg unfertilized, or depositing it fecundated at will, when engaged in laying her eggs.*

The answer to the question, how a queen can know when she has to lay a male or a female egg, will be that instinct will tell her, and truly at the moment when she pushes her abdomen into a wide drone cell, or the narrow cell of a worker for the purpose of laying an egg. The distinction of the wider and narrower cells will certainly be felt out by a normal queen with her abdomen, and by this sensation she will know that she must fertilize the egg to be deposited in a narrow cell, while she has to lay down the egg without fecundation in a wide one. By the peculiar texture of an incomplete royal-cell too, a normal queen will be instinctively induced to fertilize the egg to be deposited in it. By this means Dzierzon might have explained that phenomenon in the bee-hive which has always excited astonishment as a wonderful mystery, namely, that faculty possessed by a normal queen of furnishing the drone-cells, worker-cells, and queen-cells of the combs, which are arranged in different number and order in every bee-hive with the right eggs. It would certainly still remain to be proved from the organization and arrangement of the separate sections of the female sexual organs, that it really was possible for a fertilized queen, by the presence of decidedly voluntary muscles, to retain the semen in the seminal receptacle or evacuate it at will. From the investigation above referred to, which I made upon fertilized female insects, it appears that by the copulation of insects the ovaries are not fecundated, but that the seminal receptacle is filled with semen, and that the fecundation of the egg only takes place during oviposition at the moment when the egg to be laid slips by the orifice of the seminal receptacle in the oviduct. With regard to this, I may refer to those female insects, which, after the completion of copulation, survive their males in the autumn, hybernate with the ovaries imperfectly developed, and only lay fertilized eggs capable of development in the following spring, after their ovaries have become filled with mature eggs. Such females, therefore, preserve the male semen received during copulation in their seminal receptacle, keep it fresh probably by the aid of the secretion of the appendicular glands of the seminal capsule, and evacuate it at pleasure when required during the act of laying. For this purpose particular voluntary muscles do really exist. I have observed them in the vicinity of the exterior of the seminal capsule in many female beetles. In the immediate vicinity of the seminal receptacle of female bees also, I have seen voluntary muscles without, however, being able to state with certainty what definite functions they have to perform. From this the possibility of a voluntary evacuation of semen from the seminal receptacle of fecundated female insects could certainly not be denied, especially as the voluntary deposition of male and female eggs by a queen-bee may be proved by the brood produced from her. After I had called the attention of Von Berlepsch to the existence of voluntary muscles of the seminal receptacle, he expressed himself upon this point in the following way: "Probably the queen has the faculty of closing the orifice of the receptacle at pleasure, perhaps by the contraction of the whole vesicular membrane, or even that of removing and somewhat retracting the whole receptacle sideways from the tube of the oviduct into which it opens, so that those eggs which she wishes to deposite in male cells may glide past untouched by the semen."

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*According to a statement made to me by Dzierzon, a queen may acquire the power of laying fertilized eggs for five years, by a single normally executed copulation.

The power of a fertilized queen to lay male or female eggs at pleasure, may also be proved by the following experiment. In a Dzierzon hive we may, to a certain extent, compel a fertilized queen to lay male or female eggs. The construction of one of these hives permits the nature of the combs prepared in it by the workers to be closely inspected. If the workers of a hive furnished with a normal queen prepare too many drone-cells, which we may, perhaps, not wish to have, or if the hive requires more workers, we may remove the drone combs, whose cells the queen would have supplied with male, that is to say, unfertilized eggs, and instead of these suspend combs with empty workers cells. The queen will furnish these combs also with eggs, and indeed to correspond with the nature of the cells, with female or fertilized eggs, from which the workers may rear their like. In the summer we may induce the queens of populous hives to lay drone-eggs, if we suspend an empty drone-comb in the midst of the hive. From this it follows that the intelligent bee-keeper has it in his own hands in what direction he will turn the activity of this or that colony of bees, and that by suitable assistance he may prevent the disorganization and demorilization of a bee-hive.

Before I turn to the strictly scientific proofs which I have still to furnish, in order to give permanence to the view upon the reproduction of the bees put forward by Dzierzon only as a hypothesis, and raise it to the rank of a theory, so that it may take its proper place in the history of animal development, I will here cite a few more empirical proofs, by which alone the correctness of Dzierzon's theory would be convincingly shown, if its importance did not require still more impressive facts for its establishment.

I must not omit to mention that Dzierzon himself, after calling a number of opponents into the field by the promulgation of this new theory, and after all possible imaginable objections had been raised from the most various sides against its correctness, began to doubt the perfect tenability of his theory. Notwithstanding that Dzierzon very recently expresses himself with peculiar reserve and caution upon certain points of his theory,* other experienced apiarians still held very firmly to it, as after it had once become familiar to them by its assistance every occurrence in a bee-hive, however unexpected or apparently strange, was instantly understood by them.

Above all we must here mention Herr von Berlepsch, who has set himself the task of testing Dzierzon's theory in every direction, with his abundance of bee-hives. His establishment of bees, which is most carefully attended to, and kept in the most exemplary order, also offers quite uniquely in its kind by the disposition, arrangement, and mass of its materials, the best and most certain opportunity of testing and answering those questions relating to bee-life raised by Dzierzon.

The following extremely interesting experiments were made by Berlepsch, which must again convert Dzierzon to himself, since he appears to have become a doubter of his own theory.

In May, 1854, Berlepsch caught an old fertile queen and confined her in a small queen cage, in order to incorporate her with a new colony of bees after its establishment. She was in the

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*See his *Bienenfreund aus Schlesien*, 1854, No. 8, page 64.

normal state, and up to that time had produced the necessary drones and workers. Berlepsch gives the following account of this queen: "As I was closing the lid, (of the queen's cage) which ran in a groove, I pinched the queen so strongly at the apex of the abdomen, that she contracted the whole abdomen like a bee that had been stung, and allowed it to drag after her. I thought at first that she was lost, but as she was still living an hour afterwards, and sitting again extended and quiet, I gave her back to her people. She laid, as before, thousands of eggs, *but from all these nothing but drones were henceforward developed.* If I had only dissected this queen as soon as I became aware of her drone-productiveness, I should at least have seen whether the seminal vesicle was still in existence and normally filled. But I delayed the dissection, and when at length I wished to undertake it, the queen was gone. This certainly was a very remarkable occurrence, which speaking loudly in favor of Dzierzon's hypothesis of the unfecundated state of all male eggs, was communicated by me privately to President Busch for his opinion, as I could not then form any definite opinion for myself, not then knowing with certainty that the vesicle is the *receptaculum seminis*, and the white slime (its contents) the *sperma virile.* Busch, however, was also unable to form an opinion; my servant Gunther on the contrary, thought that perhaps the receptaculum had been crushed and destroyed. This, however, I regard as extremely improbable, as the crushing of the receptacle, which is generally very firm, between the soft surrounding parts of the body of the queen, without quickly leading to the death of the latter herself, is scarcely possible. I believe, therefore, that it was only the organs which may act in opening and closing the orifice, or in retracting and advancing the receptacle that were lamed, stiffened," &c.

If I am to express any opinion upon this interesting case, I suppose that by the pinching of the abdomen the seminal receptacle of the queen filled with semen, was torn away from the oviduct at its opening point, by which the queen thus injured, was no longer enabled to fertilize her eggs during deposition, and therefore could only lay unfertilized and consequently male eggs.

Berlepsch reports as follows upon another experiment confirmatory of Dzierzon's principal point, which he made in consequence of studying J. Muller's *Physiologie des Menschen*: "Now only did I obtain a full conviction of the existence of the spermatozoa; and when I read in the above mentioned work that *high and low temperature cause the movements of the spermatozoa to cease*, I thought to myself: Now you have a complete explanation of Dzierzon's case;* and if it be true that in *apis mellifica*, the male eggs regularly develope themselves spontaneously into males, but are only converted into female eggs by the fecundation of the spermatozoa, every normally fruitful queen must cease to lay female female eggs from the moment when we succeed in rendering the spermatozoa motionless (killing them) without destroying the mother herself At the end of June, 1854, therefore, I took three very fruitful queens, imprisoned each of them in a queen cage, went to Muhlhausen and placed the cages in the ice-cellar of an inn-keeper there who was a friend of mine. There I left them for about thirty-six hours. The queens were of course completely benumbed, regularly covered with hoar frost, and when I returned with them to Seebach, I exposed them to the sun. which was just rising. For a long time none of them stirred; at last, towards seven o'clock, I observed movements of the feet in one of them. By means of a fine bit of wood I put a little honey upon her proboscis, and in ten or twelve minutes more, she had again returned to life. The two others on the contrary were dead. This appeared very remarkable to me, as even worker-bees, whose vitality, however, is very much weaker than that of the queens, generally survive such a short freezing; and the only reason I can find for it, is that the temperature of the ice-cellar was too low, and therefore the queens were too much penetrated by the frost, if the circumstance that the queens were too heavy with eggs, and therefore less able than at other times to bear external injurious influences upon their bodies, may not have co-operated to produce death. I returned the revived queen to her people. She laid, as before, thousands of eggs, but *from all of them only drones were evolved.* When I subsequently examined the semen, I found it less consistent and with a yellowish tinge."

From this extremely interesting experiment, it follows evidently that the male eggs of the bees require no fertilization. The spermatozoids which this queen, exposed to such an intense cold, contained in her seminal receptacle, were certainly benumbed, and did not again become capable of movement after the thawing; so that therefore this queen could only have laid unfecundated eggs, for even if she had emptied the contents of her seminal receptacle over the eggs when laying them in order to fertilize them, the numbed spermatozoids would have remained incapable of action.

A third empirical proof by which the principal point of Dzierzon's theory of reproduction is supported, is furnished by the phenomena which may be observed in the production of males amongst bees. Attention has only been directed to the production of hybrid bees at a very recent period, since the Italian race of bees has been introduced into Germany by Dzierzon and Berlepsch. The so-called Italian bees form no separate species, but must only be regarded as a variety of the apis mellifica. These Italian bees are distinguished at the first glance by the leather-yellow color of their abdomen from the unicolorous blackish-brown German bees. In the females and workers of the Italian race, the first, second, and third abdominal segments appear of a rusty-yellow color, (*colore rufo-ferrugineo*) and margined with black. This black margin is very narrow on the first segment, broader on the second, and broadest on the third. The Italian drones have the middle of the hinder margin of the second, third, and fourth, and often that of the fifth abdominal segment broadly rusty-yellow

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*Berlepsch here refers to the case communicated by Dzierzon, that a queen which had been frosted for a long time, after being brought to life by warmth, only laid male eggs, whilst previously she had also laid female eggs.

by which the blackish brown abdomen of these drones appears to be furnished on the back with from three to four rusty-brown transverse bands, of which the first is the broadest. The German drones on the contrary, have the abdominal segments only narrowly margined with rusty-yellow. According to the statements of Dzierzon and Berlepsch, who have done especial service to the breeding and diffusion of the Italian bees in Germany, these golden-yellow bees are not only more beautiful, but also more industrious and better tempered than the German bees. These latter properties are also the cause of the Italian bees having become so much liked amongst us, and of so great a demand having recently arisen for them, so that Berlepsch found himself under the necessity of declaring publicly, that "*if the Italian good-tempered, industrious race, with its beautiful color is to be kept pure and stereotyped, perhaps even improved, Dzierzon and I must be left in peace for at least one summer.*"

It is a well-known fact that by the crossing of different races of a species of animal, hybrid forms are produced, which unite in various ways certain characters of the two individuals of different races which were employed for the production of such hybrids. It was natural to suppose that in the bees the production of such race hybrids must be combined with peculiar modifications. If Dzierzon's theory proved correct, we might beforehand expect that by the copulation of a unicolorous blackish-brown German and a reddish-brown Italian bee, the mixture of the two races would only be expressed in the hybrid females and workers, but not in the drones, which as proceeding from unfecundated eggs must remain purely German or purely Italian, according as the queen selected for the production of hybrids belonged to the German or the Italian race. In fact the expectations of the apiarians were not disappointed. It is true that in these crossings of the races many remarkable occurrences, such as also happen contrary to expectation, in the crossing of our larger domestic animals were still necessarily left unexplained. According to Berlepsch's observations, 1. Many Italian mothers produce partly black and partly variegated bees under all circumstances; that is to say, whether they have been fecundated by a German or an Italian drone; 2. Many Italian mothers produce only variegated bees when they are fertilized by an Italian drone, but variegated and black ones mixed when fertilization is effected by a German drone; and 3. Many Italian mothers produce only variegated bees under all circumstances; that is to say, whether they are fertilized by an Italian or a German drone. Such true Italian queens, adds Berlepsch, produce Italian bees from the very first, when fertilized by an Italian drone; but on the contrary, when fertilized by a German drone, they also produce German bees at first for a longer or shorter time.

Here I must insist upon the fact that these statements of Von Berlepsch only refer to the production of workers and female bees, but by no means to drones. He endeavored to explain these surprising and singular facts, which reposed upon two years' experience, in the following manner. He refers to the existence of the appendicular gland so intimately connected with the seminal receptacle, to which I had already in the year 1837 ascribed the office of preserving by its secretion the seminal mass remaining for months in the seminal capsule in a fresh state. Berlepsch, starting from this view, now thought that the maternal liquor of the appendicular gland constantly penetrating (into the seminal receptacle) gradually permeates the spermatozoa to such an extent that their paternal elements are overpowered by the maternal ones. If the mother bee is of pure Italian blood, none but variegated bees must be produced from her fertilized eggs as soon as the spermatozoa derived from a German drone are sufficiently permeated; but on the contrary, if the mother be not purely Italian, black bees will always remain. This conjecture which I only quote here for the present as a conjecture, without saying anything for or against it, Berlepsch also endeavored to support by the behavior of a German queen, which being fertilized by an Italian drone, produced last year variegated bees amongst the black, but this year only black bees.

In all these observations with reference to the propagation and multiplication of the Italian race of bees, the brood of drones always turned out purely Italian or purely German, even when crossings occurred between German and Italian bees, according as the queen subjected to crossing belonged to the Italian or the German race. But in order to attain certainty with regard to these phenomena, the observations to be made for this purpose must be performed with the greatest care. The observations will have to be made with individuals of perfectly pure race, which will not always be obtained with ease and certainty, since the breeding of the Italian swarms side by side with the German bee-hives is already carried on amongst us to a very great extent. How difficult it may be to find a perfectly genuine and pure queen for such experiments, is shown by the mixtures of the two races of bees in question, observed by Berlepsch and already referred to. I can, therefore, lay no very great stress upon an observation which Dzierzon made upon an Italian queen, and which, as I have already indicated, has made this cautious apiarian doubtful of his own theory. This isolated case, in which, moreover, some circumstance might probably have remained unnoticed, cannot overthrow a proposition, the correctness of which has been confirmed in so striking a manner by a number of other observations. How Dzierzon was surprised by some such disturbing accident appears from his own statement, which I will give here literally, in order to show that Dzierzon is not one of those who cannot be led away from a preconceived opinion, whether it be right or wrong. His words* are as follows:

"Continued observations of the hybrid hives must be no less adapted to raise the veil more and more to penetrate into the obscurity and finally bring the mysterious truth to light. If the drone egg does not require fertilization, Italian mothers must always produce Italian drones, and German mothers German drones, even when they have been fertilized by drones of the other race. The Silesian Apiarian (Bienenfreund)

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*See *Bienenfreund aus Schlesien*, 1854, No. 8, page 63.

possesses hybrid hives of both kinds, and did not permit any want of observations so far as the limited time enabled him to make them, but he met with new unsolvable riddles. The Italian hybrid mothers have, throughout, completely confirmed the supposition and produced the most beautiful Italian drones, one almost more beautiful than the genuine stocks, the maternal stock itself. Of two German hybrid hives, one also produced only the ordinary black drones; the other the same, but unexpectedly amongst these a few appeared which glittered like gold, and were yellower than any single bee even in the genuine Italian hives. It certainly was possible that even here a beautiful Italian amongst the workers, of which a portion had the color of indigenous bees, and another portion that of the Italians, might have laid some eggs, from which the few yellow drones might have been produced. Nevertheless, the Silesian Apiarian is not particularly inclined to explain the phenomenon in this way, so as not to expose himself to the suspicion that only a predilection for his hypothesis led him to have recourse to this explanation, as in point of fact the deposition of eggs by worker bees when a queen is present, is an exceptional occurrence of the rarest kind. Although the vesicle filled with semen does not implant the vital germ for the drone in the egg, may not a peculiar emanation from it nevertheless act in determining the kind and color?"

Dzierzon is certainly in the wrong, when, for the sake of this one observation which disturbs him, and in order to explain it, he again calls in the aid of the long overthrown hypothesis of an *aura seminalis.* Von Berlepsch has taken the trouble to invalidate the case detailed by Dzierzon, which is said to speak against his own theory. He very justly observes that in the preceding, Dzierzon has not established the fact that those few golden drones were actually produced by the queen, and not by a very fine egg-laying worker; (as the half of the workers in this hive consisted of these) for although the presence of an egg-laying worker together with a queen is a case of the very rarest occurrence, yet it can be proved that such exceptions do occur. Berlepsch also points out with reason that Dzierzon was never perfectly certain on the point, whether the queen, in whose hive he observed the remarkable yellow drones, was by birth of the true German race, or produced from hybrid brood. Dzierzon himself adds the warning to the statement of his case, that in such observation great caution is necessary to avoid erroneous conclusions, as on such occasions we must be perfectly sure that the queen belongs by birth to the right race; for if she has been produced from hybrid brood it is impossible for her to produce even pure drones, but she produces half Italian and half German drones. However, I regard this doubt, which had been raised in Dzierzon with regard to his own theory, and by his own observations, as a sufficient reason for getting further information from Herr Von Berlepsch, who had obtained great experience in breeding Italian bees for the last two years, with regard to the real truth in the production of hybrids taking place between Italian and German bees. On the 2d of March of last year, (1856) he replied to my questions put to him for this purpose, in the following manner. In the first place he referred to his observations already published in the *Bienenzeitung*, where he says: "All queens *which are of a beautiful yellow externally only produce Italian drones*, even when they produce partly Italian and partly German workers. A German mother, which was fertilized by an Italian drone, produced German and Italian workers, *but only German drones.* When on the contrary the mother is not of a fine yellow—when she has traces of black in her, the drones also come forth mixed, whether the mother be fertilized by a German or an Italian male; of course because the males only take after the mother." To this Von Berlepsch added the following commentary in his letter: "An Italian queen fertilized by a German drone, or a German queen by an Italian drone, *constantly* (only one exception has occurred to me) produces females (workers, queens,) of three different colors; *a. True Italians*, that is to say, as yellow and banded as the female descendants of Italian queens which were fecundated by Italian drones; *b. True Germans*, and *c. Mongrels.* With many mothers the Italian, and with many the German descendants predominate; but the mongrels, which as regards color, are intermediate between the Germans and the Italians, are *always* in the minority, and indeed in the greatest minority, for in many hives we rarely see a mongrel, and in many none at all. Now as the queens are only workers, otherwise, that is to say, further developed, the same conditions occur in them also, and in hybrid mothers the color of the royal descendants depends upon the egg. If the egg would have given a true Italian worker, it also furnishes a genuine Italian queen, &c. The males, *without exception*, follow the mother as regards color, and during the last summer I was unable to discover with hybrid mothers even a single male which resembled its father, in spite of the most careful observation and closest examination.

After such important empirical facts, derived from the observation of a great number of productions of hybrid bees, it must therefore be regarded as certain, that in accordance with Dzierzon's theory, *bees of pure race are deprived of the power of producing hybrid drones.*

[CONCLUDED NEXT MONTH.]

[For the American Bee Journal.]

American Bee Plant.

Over the name of A. A. Terry, on page 58, of the September number of the BEE JOURNAL, volume 3, we find an article recommending this plant as a great honey-yielding plant in the vicinity of Chicago. Will the writer of that article please favor me with a package of seed of said plant, and I will reciprocate the favor.

I am passionately fond of bee-culture, and wish to procure the best honey-yielding plants.

The reason I make this request through the AMERICAN BEE JOURNAL is, I enclosed some money directed to Mr. Terry at Chicago, (Ill.,) but received no answer. Chicago may not be his address.
A. SALISBURY.

CAMARGO, DOUGLASS CO., ILL.

For the American Bee Journal.

The Eureka Hive Again.

BOMBASTES ab initio, FURIOSO de finibus.

At length I own the power of the pill,
(Horace Epod. xvii, 1.)

The physic makes him worse and sicker still.
(Aneid xii, 46.)

MR. EDITOR:—As our amiable and beloved brother correspondent, Wm. A. Bennett, confines my strictures upon Allen's Bee Hive to *plain English*, I would beg your leave at present to remark briefly that inasmuch as the bombastic introduction to the object under review, July No. 1867, page 17, smacked so strong of Greece and Rome, I felt as though all my Greek and Latin quotations were necessary to impress his super-lucid, logical faculties with my high appreciation of his ancient rhetoric; and as though his Sophocles and Virgil were not disgraced in the presence of an Archimedes and a Cicero.

If brother Bennett means to pick a literary quarrel, I confess that I am not the man who has sought either to provoke his acidulated retorts, or to engage in a dispute upon so ignoble an object as the hive in question, but simply meant to inform my bee-keeping friends upon matters with which I consider myself as well acquainted as brother B. Still, as *plain English* seems to be good enough for my very modest friend, I shall not refrain from giving to him, as well as "to all whom it may concern," my opinion in his vernacular dress.

In the first place, I disclaim all intention to misrepresent his language. The withdrawing of frames from the hive is a very simple matter in any movable comb-hive; not so, however, their replacement, without killing any bees. It is one thing to open a hive and close it, for the mere purpose of gratifying the curiosity of a visitant friend, and quite a different one to perform practical operations with the same.

In nine cases out of every ten, the practical apiarian wishes to ascertain the state of the central combs only, not merely of one hive, but of nearly all, in as short a period as possible, and in these particular instances I deny the least adaptedness to public favor to this puffed-up imitation of a hive, which as described elsewhere, requires indefinitely more skill in management and time in operating, than the Langstroth hive in any of its various *legitimate* forms. Supposing the operator would wish to confine the queens toward the end of the honey season, he, with the Langstroth hive, removes the honey-board, shifts and lifts any particular frame where she is most likely to be found; and not unfrequently this hive may be opened, the queen confined and hive closed up, before a side-opener is ready for the removal of a single frame. Does he wish to obtain brood from a side-opener with the thermometer at 60 or 64°? Even Mr. Bennett, if he understand anything about the matter, will surely not pretend to insist that he can obtain it, replace the frames, and insert it in its appropriate place without chilling it, or killing it outright. And how would it work with these hives, were you to take away the queens with the view to their constructing queen cells, intended for the multiplication of stock, at a time when the hives with permanent sides are often too cold to insure their construction and safe removal to nuclei?

Now, all this, in addition to what I have already said elsewhere, is surely not a very great great inducement to apiarians who understand their business, to produce and introduce them into their yards; and if these do not patronize your hive, your hive will surely *never become popular*, and this I call *plain English*, without misinterpretation, as well as the point which I intended to establish, and which time will prove I have established.

As to brother Bennett's "*incidental allusion*," Sir, you will find by referring to his description that this *frame work and frames* were by him considered "perhaps the most important improvement;" and that therefore *quibbling* about *incidentals* were unnatural, inasmuch as the *main subject* is altogether worthless in itself. These, my very dear sir, are no misstatements, and need not the assistance of my silent friend Cicero to make them weigh with that class of people who buy *homes* for their bees, as we think, *clearly pre-eminent.*

If, however, these *plain English* ventilations of the "Home" are not thought sufficient to put it in a healthful condition, the subject may, by a little more pressure and the forebearance of the Editor, be made susceptible of admitting such a quantity of *condensed steam*, which, by *bursting* the container, will cause it to collapse of its own accord, and occasion the loss of another grain or two of that homœopathic apis with which its logical advocate is so superaboundingly imbued. Yet, as in my opinion, I have neither harmed nor fondled the poor thing in any way, I would earnestly entreat all those fond of the "best of its kind," to invest a couple of dollars in the purchase of a dozen or two, and report their favors through the present medium, and thus help it and its protectors upon their legs, for the sole sake of another additional public good. And if already I have not done more good than harm by thus indirectly advertising an object, which, in my private opinion, publicly expressed, is altogether worthless in profitable and extensive bee culture, I shall feel more happy than hurt by brother B.'s irascibility, which smacks a little too much of that kind of logic, that always entirely fails at writing or reasoning a darling hobby into public favor and approbation.

You will, therefore, perceive, Mr. Editor, that I have not endeavored to conform to syllogistic reasoning, because movable sides and distanced frame-works have been coherently reasoned out of use "long, long ago." And as moreover that kind of reasoning would avail but little with a writer so dead set against quotations, who can yet quote the illustrious "moon of green cheese," "the world-famed millstone," and "Necker's two spears of grass," without giving credit to the dapstering world for the same, I have concluded to *annihilate* him in *plain English*, thus:

"Howling, roaring, and a thousand groans,
Expressed his torments in most dismal tones."
CICERO de Finibus, ii, 29.

Profoundly, your "very learned and luminous servant," F. VARRO.

CANTON, PA., October 12, 1867.

[From the Iowa Homestead.]

Luck in Bee-keeping—Drones and Moths.

EDITOR IOWA HOMESTEAD: When I was twelve years old my father told me that as he could never have any luck with bees, I might buy a swarm and have it for myself; and in those days bees would not do anything without you bought somebody's luck, and you must not pay money for bees, but if possible exchange sheep for them, &c. I could find plenty of swarms at three dollars each, but they would not sell their lucky swarms. I finally found a widow who sold me her lucky swarm for seven dollars' worth of hemlock lumber, with a verbal agreement that I was to have her luck with it. The consequence to her proved to be bad, for her bees would swarm and go into the woods, &c ; but I had the best of luck. I kept that swarm twelve years in the same comb, and I never failed to have two swarms and sometimes three every season, and a box of honey from my old swarm. My young swarms would do well the first season, but only once in a while one that would do as well as the old one the second season. I soon began to study what made that swarm always have a fertile queen —always be lucky—simply because the comb was built right; every comb was straight, and every comb was a brood comb. If you get the hive in the right form, and attend to the building of the comb the first season, you will have all lucky swarms. I make all lucky swarms now, and I do not consider a swarm in proper working order until it is made into a lucky swarm. There is no need of having small swarms in the fall to double; the summer is the time to fix up your bees for winter—fall is too late. Again, I want you to understand that I do not claim that the hive I use is the best, by any means; but my method of building up swarms is correct, I care not who says to the contrary. That is the method I have recommended: We will suppose that you allow your bees to swarm naturally; well, here is a large swarm that come out when the basswood is in full bloom. The bees make comb very rapidly, and fill their hive with comb in eight days, as I have known them to do; at least one-third of said comb will be drone, or store comb, which is good for nothing for raising workers next season; or, we will say a second swarm comes out at the same time with a young queen; it will take her some time to come up to her full breeding capacity; if they fill the hive, there will be more honey than bees, and large quantities of the comb is built for stores, &c. Neither of those swarms will be lucky swarms, either for raising bees or storing honey, just so long as you keep the comb in that condition; and here I will let some of my bee-keeping friends into a secret—that is, if you do not have any more drone comb in each hive than you want, (which is but very little, where you keep a number of swarms), your bees will not be expending time and honey raising drones, and you will not have to pay a patent-right man anything for his drone trap; in other words, if you do not raise drones you will not have them to catch, on the same principle that if you do not raise any moths you have not got to catch them with a patent moth trap. I never lost a swarm by flight or with the moths, because I keep lucky swarms, I suppose. E. GALLUP.

OSAGE, IOWA.

For the American Bee Journal.

Can Italian Bees be Improved?

DEAR JOURNAL: Having been a reader of your columns for a year or so, I have become somewhat acquainted with your numerous correspondents, and feel rather inclined to be reckoned as at least a sort of second cousin in the family. And since one of the family "living some miles from land, away out from shore," who has raised an Italian queen which produced a worker progeny with four yellow bands, instead of the usual number of three, and thus became the object of a criticism by a brother, namely, "raising Italians *more than pure*," I wish to say a word on the subject of purity of varieties, and the improvement of the same.

For the last five years I have been experimenting with the Italian variety, and have received queens from Mr. Langstroth three or four times; and have bred from a queen raised by Mr. Colvin, of Baltimore; also from one from an apiary in the north part of this State; and likewise from one of six queens which were brought here by Prof. Harrison, of Ohio.

In these experiments I think I have verified the following facts:

First. That the Italian bee can be improved just as easily as any other animal, and by the same means. That is, by selecting the largest, brightest-colored, most prolific, best tempered, and best honey-gatherers, and breeding only from such colonies as have these qualities.

Let this be done from year to year by every apiarian, and the man that lives "several miles from land" will not be the only one who will raise queens "*more than pure*."

One year ago last September, I received my beautiful queen from Rev. Mr. Langstroth, that breeds workers fully up to the standard. In size the workers are perceptibly larger than any of the old black variety that I ever saw. In color, they have, without exception, three yellow bands, which are always visible, whether the bees are loaded with honey or not; and the remaining bands are of a whitish yellow, so that the bee presents a yellowish color throughout. When I saw the progeny of this queen, I thought I had drawn a prize. The young queens raised from her were nearly all highly colored, with one of a darker hue occasionally. After I commenced breeding from her last spring, I observed one day pouring forth from a colony into which I had inserted a queen last fall, such a shower of bright golden bees as my eyes had never seen before. In size and color, I saw at once that Mr. Langstroth's queen could not compete with this one. And what raised my enthusiasm to almost a fever heat was, to see that the drones were as bright-colored as the workers. I immediately commenced breeding from this queen alone, and have not failed in all I have raised this summer, in producing young queens as bright as the mother.

And now to the second point, viz:

Queens can be had whose queen-progeny will all be of a bright yellow, except the two terminal rings of the abdomen, which will be of a darker color approaching to brown.

I saw such a statement questioned by many of your correspondents, after it was made by Mrs. Tupper, of this State. My experience, thus far, goes to verify her's.

And further, almost all writers disagree with me in the following, and I am not certain that I am correct; but at present I look with suspicion on any queen as proper to breed from, which does not produce bright yellow drones as well as workers. The black bee exists in Italy as well as the bright and pure yellow variety; and hence all may not be pure that are imported from that country. The experienced apiarian, however, can only determine this point. So to guard against any possible impurity, let every apiarian remove all stocks from his apiary, which do not produce bright drones as well as workers, and the result cannot but prove satisfactory.

But as every sermon is supposed to have three heads, so has my sermon on bees.

I hasten to my third point, viz:

Pure Italian bees are extremely amiable in temper or disposition.

I do not know why such is the case, but in corroboration of what all assert who have experimented with them, I know that my Italians are not a tenth part as much inclined to sting as the common bee.

From the foregoing facts, coming under my own observation, I propose to select such colonies alone as have the characteristics of workers of larger size; bright yellow bands, three in number; amiable disposition; whose drones also are bright yellow; and which are *strong in number* and *rich in stores*. From the best of these select the queen or queens to breed from, and remove all the others some distance away.

If this be persistently done, I have no more doubt that the Italian bee will ultimately be very much improved, than I have of the capability of improving by a similar process, sheep, swine, neat cattle, and horses.

E. L. Briggs.

Mt. Pleasant, Iowa.

Mr. Curtis in the London *Gardener's Chronicle*, 1841, states that his garden beans suffered greatly in the spring of that year, from the holes which humble bees (*Bombus terrestris and lucorum*) made in the blossoms, as they usually do, to get out the honey contained in the nectary; which operation, injuring the pods in their earliest state, four-fifths of them were destroyed and produced no beans.

[For the American Bee Journal.]

Purity of Drones.

On Board Steamer America,
Between New York and Bremen,
August 27, 1867.

Editor of the Bee Journal: On reading the "Bienenfreund aus Schlesien," published by Dzierzon, volume 1, 1854, pages 63 and 64, I observed that he had really found in a hive with a black queen impregnated by an Italian drone, some beautiful yellow drones; and that he thinks further investigation is necessary to solve this question of the purity of drones. Whether he has made any more observations or not, I have not learned; but presume that he has long ago come to the conclusion that drones from impurely impregnated queens are impure too, even if not in the same degree as the workers. If there is the slightest degree of bastardizing perceptible in the drones of such mothers, they must of course be impure; and an Italian queen impregnated by such a drone is bastardized, even though it be not to the extent that her progeny show their impurity. Perhaps the imperfect three stripes in one of forty of the worker progeny of such queens, which a well-known writer remarked to me were found in all her pure stocks, is a consequence of such an impregnation. I found about such a proportion of imperfectly marked workers myself in a small number of my hives. But these same colonies have, in most instances this year after swarming, raised queens from their own brood whose worker progeny is perfectly marked. But not only these colonies, but nearly twenty-five others that had each a number of apparently perfect black workers, have this summer raised queens whose progeny are beautiful and all perfectly marked. I therefore come to the conclusion that the Italian bees "run in" as fast as they "run out," if in an apiary or neighborhood one or the other race is predominant. To raise purely impregnated queens will therefore be very easy for me hereafter. The proportion of bastardized queens raised this summer, whose progeny I saw before my departure from home, was only fourteen out of about one hundred and fifty.

It will be interesting to the readers of the Bee Journal to learn that I have taken two small colonies of Italian bees with me on my journey to Italy, intending to compare them minutely with Prof. Mona's bees in Italy, if I succeed in carrying them there alive.* I will further make very careful observations whether the bees there are all perfectly marked with three bands, inquire of Prof. Mona whether or not young queens vary in color, and whether it is required that they should be splendid yellow, leather-colored, black, or brown; and probably get the Professor's answer in writing, to be sent in the original to the editor of the Bee Journal.

If it should then appear from my observations and the Professor's reply that the queens in my apiary are bastardized, I will frankly state it, and give as clear a description of the pure Italian or Ligurian bee as I may be able to make. I trust that on seeing the pure race in its native country, and comparing a hundred queens raised and impregnated there, I shall be as well qualified to write about the purity of Italian bees and queens, as a Professor, who derived all his knowledge about this matter from half a dozen well marked pure queens and about half a dozen more of their daughters.

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*This letter was in type for the last number of the Bee Journal, but inadvertantly crowded out.

Hoping that these few lines may reach you safely, and that they may find room in the JOURNAL,

I am, yours,
A. GRIMM.

[For the American Bee Journal.]

Side-Opening Hives.

MR. EDITOR:—I noticed in the October number of the BEE JOURNAL an article by Novice about bee-hives, and as he is using a side-opening hive, and one in which the frames form the honey-board, I thought I would give my own experience with regard to that class of hives.

Three years ago wishing to Italianize my stock of bees, I concluded to try the movable comb-hive, and so made a few that year of the Quinby form of the Langstroth hive. Being satisfied that the movable comb or frame hive was the hive for the apiarian, I concluded to make no other. I had seen the American hive and was pleased with it. It seemed to me that the side-opening feature, and also the arrangement of the top of the frames to form the honey-board, might be adopted with advantage in the hive I was using. So last year all my hives were side-opening ones, using the same frames I had been using, but having strips of the proper width and thickness glued on their sides and so cut as to leave vacancies for the bees to pass through. I preferred gluing them on to increase the width of the top, because they could then be very easily taken off if desired. I had the impression which others have, that the honey-board was superfluous, giving the bees the air-space and the thickness of the board, as so much extra distance to travel.

I watched the two forms of hive closely, and could not see that there was any difference in the amount of honey stored in the boxes; while the disadvantages of the solid top frames were so obvious, that the fifty hives made this year were all made with honey-boards, and also the strips taken off the frames of last year's hives and the additional height necessary for the air-space put to them, and honey-boards made for them also. I found that it was so much trouble to take off the boxes, and so many bees were killed in putting them back, that I always disliked opening those hives. When there were no boxes on the hives, they could be opened rather than the other form of hive. But with the honey-board it makes no difference whether there are boxes on the hive or not, save the increased weight of the honey-board.

The side-opening arrangement of last year's hives is retained; but I have scarcely used it all this year. Occasionally a swarm will build combs so irregularly that it is an advantage to have a side-opening hive. But there are so few such cases that I have not made any more side-opening hives, and probably never shall.

And now I would like to ask a question. What is the best height for the movable comb hive where bees are wintered in-doors? Mr. Langstroth's hives, I believe, are nine inches high. Mr. Quinby makes the Langstroth hive twelve and one-half inches high. Mr. Otis and others claim that bees will store more honey in boxes in the shallow hive used by Mr. Langstroth, than in the higher one recommended by Mr. Quinby. In the plan now adopted by myself as well as others, of putting empty boxes under those nearly full, I am not sure but that the shallow hive is the best; and I have pretty much decided to adopt that form in the future. I am aware that it is inconvenient to have two sizes of frame in the same apiary; but if bees will store more honey in the shallow form of hive, I am willing to risk the inconvenience, as I can look upon them and treat them as two separate apiaries, independent of each other. L. C. FRANCIS.

SPRINGFIELD, ILL.

[For the American Bee Journal.]

Italianizing Colonies of Black Bees in Box Hives.

I find but little trouble in introducing Italian queens to black bees in box hives.

When the honey-gathering is not profuse, I select my time one-half hour before sunset, so as not to be troubled by robbers while the disturbed colony is not prepared for self-defence.

I capture two black queens of an evening. 1. I take a plain box the same dimensions of the width and breadth of the mouth of my hive. 2. I invert my hive, placing the box on the inverted hive. I blow some smoke of rags in the joints about the lid which is now down, then commence drumming on the hive with a small stick, and in ten minutes I remove my box and shake the bees out on a sheet spread near the hive, and capture the black queen. 3. I insert my caged queen between two flakes of honey-comb, containing young bees, if possible. It is all unnecessary to wait six hours before inserting her. I let her remain till the second evening, when I blow some smoke under the hive and again invert it; take my queen cage out and remove the cork, draw a piece of newspaper over the mouth of the cage, tying it fast around the cage with thread. I then daub the paper with honey, and perforate it with a few holes with the small blade of a pocket knife; then put the cage back to its proper place, invert the hive, and find all right nine times in ten.

Experience has taught me that if the caged queen is placed among the larvæ and eggs, the bees are not so apt to start royal cells.

I do not wish to be understood as recommending the box hive, but only to assist those who already have bees in them and are not prepared to transfer, and who wish to have Italian bees.

The Langstroth or movable comb hive in some form, is an almost indispensable requisite to every propagator of bees. A. SALISBURY.

CAMARGO, ILL.

[For the American Bee Journal.]

Summer Feeding of Bees.

I moved my bees out of the cellar on the 9th of April last. On the 19th they had gathered considerable honey from maple sap. They had an abundance of brood in stages, and the Italians had drones hatching out. The spring was very cold and backward. On only a very few days in May could the bees come out of their hives. June proved to be nearly as bad. The bees had to draw on their old supplies, and a great many swarms in this section came near starving. From the 3d of June to the 15th, while the wild plums and wild apples were in bloom, they gathered somewhat more than they consumed. From the 15th of June to the 11th of July there was literally nothing for the black bees to get. Some swarms actually starved to death. On the 11th of July the sumac began to blossom, and lasted till the 24th, when the bees began to gather honey from the linden or basswood. From that time until the 6th of October, those swarms that were in a condition to do so, gathered abundance of honey. On the 9th and 10th of July, I examined some black stocks for my neighbors, and found no eggs nor brood in any stage in their hives. Of course such hives were not in a condition to store honey or raise surplus bees for increase this season.

During all this time, while the black bees were starving, the Italians were busy at work every day raising brood, and increasing very rapidly. (I have scattered white clover seed broadcast all around me, and it does first rate, so that I shall have that to keep me along next season.)

Some people say that it does not pay to feed bees. I know that it pays just as well to feed bees when they need it, as it does to feed anything else. Where I lived in Wisconsin for a number of years before white clover came into the country, I had to feed bees in the latter part of June and the early part of July. But then I had not the benefit of the basswood, for there was none within three miles of me.

I find that bees need feeding with me oftener in the summer to make it profitable, than at any other season of the year. For instance, just before basswood blossoms there is a scarcity of forage. The queen stops breeding, or if not altogether, she will to a certain extent, even if an abundance of sealed honey remains in the hive. Now, if you will give two table spoonsful of very thin sweet, (even if it is made of the cheapest quality of sugar) to a swarm every evening for a week, you will have the cells well filled with brood when the honey season commences. On the other hand, suppose you do not stimulate by feeding, the honey season comes and the bees fill all the cells with honey in advance of the queen. The consequence is that you have a weak swarm of bees during the whole season. I am aware that this can be remedied to a certain extent in the movable comb hives, by taking out a full frame and inserting an empty one. But I have invariably found that fifty cents worth of sugar, fed at the right time and in the right manner, produced five dollars' worth of surplus bees or surplus honey, (or in about that ratio) over and above what they would have done, if they had not been stimulated.

Of course this summer feeding is not necessary every year and in all localities. The inexperienced will say, how are we to know for certain when to feed, and when not to feed? When bees have gathered honey through the day, you will always hear a loud roar or hum in the evening, if you go near the entrance of their hive. If they have not gathered anything, all will be quiet and still. If you thus ascertain that they are gathering nothing for a number of days in succession, then feed of course.

Fall feeding is not profitable, because if bees have been properly managed through the summer, you will not have any stocks that need it. There are hundreds, yea thousands of people who never know that it is necessary to feed bees sometimes in the summer. But it certainly is. A hint to the wise is sufficient; but columns written to others on the subject would do no good.

Elisha Gallup.

Osage, Iowa.

[For the American Bee Journal.]

A Strange Occurrence.

Last spring I had a stock of bees in a frame hive. They were not very strong in numbers, but had a very fertile *black* queen, and the workers were common bees. They worked very well all summer, and stored some surplus box honey. On the 30th of October, I thought I would take out the combs and cut winter passages in them. I took them all out, looked them over, and cut the passages; but could find no eggs nor sealed brood, or in fact any brood at all. I then thought of course the stock had swarmed, and there was a young unfertile queen in the hive. So I looked the frames over to find the queen, and found her all right in the hive. I knew the queen as I had clipped her wings to prevent her from flying away with a swarm when I first hived them. She appeared to be all right, as lively and active as ever; but does not lay, and has not, I should think for some time. Now, if any one can give any reason why this queen does not lay, I would like to know it. She is but one year old.

F. W. D.

☞It is not unusual to find stocks without eggs or brood at the time mentioned. Italian queens commonly cease laying at an earlier period, but recommence depositing eggs sooner than black queens.

* * *

Sparrman has given us an amusing account of the honey-ratel (*Viverra mellivora*) which has a particular instinct enabling it to discover bees, and attack them in their entrenchments. Near sunset the ratel will sit and hold one of his paws before his eyes, in order to get a distinct view of the object of his pursuit; and when, in consequence of his peering about in this manner he sees any bees flying, he knows that at this time of the day they are making for their habitations, whither he follows them and so attains his end.

[From the Country Gentleman.]

Fun Among the Bees.

Messrs. Editors: One of my neighbor's boys in passing through my apiary, would take a stick and scrape off the bees clustered on the hive and then run. He wanted to have some fun, he said, when asked why he did it. It made the bees very cross, and I was in hopes that they would teach him a lesson and make him respect them. It is a long road that never turns, and one day they got their satisfaction in a somewhat novel and pleasing way. In passing through my yard one day with his New Foundland dog at his side, they stopped to look at a large swarm clustered on a hive. They were quite close up, when some fifty bees let loose and pitched in, which made the youngster hide quickly in some tall grass hard by. His dog, having more courage, was bound to fight it out, and bit, and snapped, and growled, right and left, until about a thousand bees came to the assistance of his friends, which made it so warm for the dog that he sought his kind master in haste. Strange to say, his master was angry with him, but the dog staid by him like a true friend, with hundreds of bees for company. The young chap, very soon tiring of his tormentors, went into the house and got under a table. Not stopping to close the door, his ever faithful and loving New Foundland followed with a good swarm of bees with him, and they all went under the table, which made it so warm for our friend that he hastened out of the house and made for home, followed by his loving friend and a small swarm of bees. It taught him a lesson that he did not forget, and should be a warning to other boys not to have fun with bees.—*E. W. B.*

[For the American Bee Journal.]

More Seeming Puzzles.

Mr. J. H. Thomas, of Brooklin, Canada West, gives a very good explanation about the two or more queens in one hive, so far as it goes; but it does not go far enough. I have had sixteen young queens in one hive at one time this summer. But to the point. I have something more for him.

On the first day of last April, I found a swarm in a hollow tree, and I brought them home without disturbing them. A few days after I tipped up the log, to look under and see how they were getting along, and in doing so the centre comb filled with brood and honey, fell down. I made a smoke of chips in an old tin pan, to smoke the bees so as to get them off the comb. I then inserted the comb in a frame and put it into another colony. On returning to look at my log, the smoke was issuing out of it in all directions. As the wind was blowing very brisk, a spark had caught in the rotten wood of the log. I took a pail of water and put out the fire, and in doing so wetted the bees considerably. I then split open the log and transferred the bees, comb, and all into a frame hive. While doing this, I found an old queen with one wing and one leg gone. I put her with the bees. (I found her on the ground, where I had split open the log.) As it was a very strong stock and I had Italian drones, and the weather was too cold to raise queens in small boxes, I took out the queen on the third day after transferring, and behold, she was perfect, both wings and legs were all right! I supposed that when I examined her before, her wing and leg must have been stuck to her with honey or water. I destroyed her, and exchanged all the brood and eggs with my Italian stocks, so as to have the bees raise an Italian queen. (And here I will remark that I prefer exchanging brood in this way, instead of transferring my Italian queen from one swarm to another.) Five days after the exchange of comb, I examined the swarm to see if they had started any queens; but found that they had not. In three days more I examined them again, and was going to give them more Italian eggs, but found two queen-cells started close together, *and about one inch square of comb occupied with eggs!* Here was a poser. Where did these eggs come from? I proceeded to examine every comb carefully, to ascertain whether there was a queen present, and found the identical old grand mam with one wing and one leg gone! The other queen was a very fertile one, for there were large quantities of brood in the combs when I transferred them. So here was an instance of two queens in one hive all the winter, and both fertile. About one-third of the old queen's eggs hatched out drones in worker cells, and the remainder were workers. This accounts for my finding drones in this log, which I then supposed had lived all the winter. Perhaps the three other instances, which I mentioned in a former number of the Bee Journal, in answer to Mr. Grimm, may also have been cases of this kind. Who knows?

I have spun this yarn out perhaps longer than necessary, but I wanted to give friend Thomas all the particulars. Elisha Gallup.

Osage, Iowa.

The newer, fresher, and cleaner the comb used for guides is, the more acceptible will it be to the bees. Darker and older comb, even such as has repeatedly contained brood, may indeed also be employed for guide-comb, though bees are apt to hesitate awhile before availing themselves of it. But old comb which has become friable from age, and may readily be crushed to powder with the fingers, must always be rejected. The bees would not use it, and when constrained to remove it by want of room in the hive, they would lose much precious time in the operation, and would most likely replace it with irregularly built comb.

Bees, in the formation of their cells, have to solve a problem which would puzzle some geometers, namely, a quantity of wax being given to form of it similar and equal cells of a determinate capacity, but of the largest size in proportion to the quantity of matter employed, and disposed in such a manner as to occupy in the hive the least possible space.—*Kirby.*

[For the American Bee Journal.]

Securing Straight Combs.

Mr. Editor:—I see that Mr. Bickford in the Journal No. 5, pp. 92 and 93, for November, 1867, has hit upon the *general idea* of what has proved with me as being the best plan to secure uniform straight combs. He says that his idea is "to place in the hive before hiving the swarm *two straight combs*, *one at each point where the curved combs usually begin*, say at *one-third* of the width of the hive from each side." Of course I have no means of knowing where his bees *usually begin* to build *curved combs*, except from his article above referred to. My experience in former years, however, has proved to me that so far as my own and some of my neighbors' bees are concerned, they have never adopted as a rule of practice, any particular point within the hive, where it can be said that they "usually begin to build curved combs." I have had natural swarms to build combs very similar to Mr. Bickford's description. But, on the other hand, I have just as often had them build uniform straight combs on one side of the hive and curved, if not decidedly crooked ones on the other side, I have seen uniform straight combs on each side of the hive, and curved ones in the centre; others with uniform straight combs throughout the upper portion of the combs with curved lower ends. My experience has also convinced me that full colonies or swarms are more likely to construct uniform straight combs than light or small colonies or swarms are.

Let us now recur to the *general idea* of Mr. Bickford above—that is, the use of straight combs to be placed in the hive before hiving the swarm. *Straight combs*, or combs that are *uniform* in *straightness*, so arranged or placed in the hive that the curvatures or irregularities in the several combs will correspond with each other, is the practice that I adopted in artificial swarming during the past summer. I have been using what is known as the "Harbison Improved Patent Hive," with nine frames in each hive; and by the loss of four colonies in the winter of 1866 and 1867, had at my command in April last, thirty-six spare combs to commence operations with. In April last, I cleaned, trimmed, and straightened these combs as well as I could—making them *uniform in thickness* and *uniform in straightness*. I was also careful in the use of these combs, in so arranging them in the hives as to leave any slight curvature in the combs used in each hive to correspond with each other. This I regard as being an essential precaution to be strictly watched and followed in practice, whenever dry combs are used as guides in the brooding apartment of the hive. A mistake or neglect in the strict and careful observance of this precaution may be, and from observation, I believe, has been the cause of bees starting and building short and irregular brood-combs attached to the sides of the full combs, in the interior of the hives—thus rendering the removal and handling of the full brood combs difficult and dangerous throughout the brooding and swarming season of the year.

What is necessary in the guide combs, is to have full sheets of combs of a uniform thickness, and as straight as they can be made by first warming and then pressing them. Thus fitted out, if the operator shall carefully arrange the combs thus prepared, so that any slight curvature in the several combs used in each hive, will correspond with each other, the elements of success in securing the desired uniform straight combs will be under the control of the practical apiarian.

The next step to be taken is to use in each hive in which a natural swarm is hived, or an artificial swarm is placed, enough of these guides to insure the building by the swarm of new combs corresponding with the guide combs. The number of dry combs to be used in each hive, may be, and as I think ought to be, varied according to the size of the swarm and the size and shape of the hive in which they are put. For a small swarm in a full sized hive, I would like to have the use of from four to six guide combs, to be varied to suit the season—if early, four will do—if late, six will not be too many. For a full swarm, three or four will be sufficient—or even two, if early in the season. As to the particular place in the hive in which they should be set, I think it quite immaterial. I should not place them all together, either in the centre, or on either side of the hive. My practice has been so to arrange them in the central part of the hive as to leave one, and sometimes two, empty frames between them; and this arrangement secured for me, in each case, during the past summer, in all my young colonies (eighteen in number) uniform straight *combs*, corresponding in slight curves and thicknesses with the dry combs used in the several hives.

In each case when I used a comb full of honey, brood, &c., with a capped queen cell as a basis for a new colony, I selected the dry combs which were placed in the hive with it, corresponding in shape with the full comb thus used.

I am of the opinion that each full sheet of good sound brood comb is worth to the practical apiarian, who has in use movable comb hives, at least one dollar per pound for the purpose indicated above. To this may be added the help to his bees and profits in surplus honey.

Nov. 4, 1867. Belmont.

The indefatigable hive-bee as she flies from flower to flower, amuses the observer with her hum, which, though monotonous, pleases by exciting the idea of happy industry, that whiles the toils of labor with a song. When she alights upon a flower, and is engaged in collecting its sweets, her hum ceases, but it is resumed again the moment that she leaves it.

The majority of insects, either imbibing their food in a liquid state, or feeding on succulent substances, require no aqueous fluid for diluting it. Water, however, is essential to bees, ants, and some other tribes, which drink it with avidity.

In the Ukraine some of the peasants have 400 or 500 bee-hives, and make more profit of their bees than of their corn.

[From the (Albany) Country Gentleman.]

Egyptian Bees.

As several have lately made inquiry about the Egyptian bee in your columns, I will, for their gratification, give the facts I am in possession of. Early in 1866, Rev. L. L. Langstroth honored me by consigning to my care some Egyptian queens he had ordered from the Berlin Acclimatization Society. It so happened that on their arrival Mr. L. was in New York, and took charge of them. They arrived in fair condition; but I do not know what success he had in propogating from them. The first week in September last, I had more consigned to me for Mr. Langstroth, and they arrived in perfect condition. On the 28th, I received two nuclei on my own account, and have been successful in introducing queens. I will rear a few queens this season to test their progeny. Mr. W. W. Cary, of Coleraine, Mass., has an interest in this importation, and he has assisted me in their management. I mention this fact as it will give confidence to all who know his high reputation, that every exertion will be made to breed them in purity, which will be done in an apiary five miles from his Italian stock. Mr. Cary's success in breeding Italians pure is owing to his great care, and very favorable location—his large and constant sales to other breeders show their high appreciation of his stock.

I can only write of the appearance of the Egyptians, having had but little experience with them. They are smaller than the Italian, but of similar markings. The workers have a yellow spot on the back, partially masked by hair, but brilliant when the hair is wet and laid. Their abdominal rings being fringed with white hair, and the black being more glossy, gives stronger contrast of color, and I think, would be pronounced by all more beautiful than the Italian. The drones are handsome, the posterior portion of the abdomen being heavily fringed. I have seen some Italian queens handsomer than the Egyptian queens I now have, but reserve my opinion until I have seen more of them. As to Mrs. Tupper's test of an Italian queen's purity, "duplicating herself" in her queen progeny, I have no faith in it, for every close observer knows that the native black queens vary very much in size and color, where there was no possibility of any admixture of foreign blood; and we have yet to learn how much may be done by careful selection of queens for breeding. I have a few live specimens and some in alcohol, now on exhibition at the fair of the American Institute.

European writers describe the Egyptian bee as being less docile than the Italian, which may be owing to not fully understanding their habits and how to handle them. Prof. Vogel, who has had the largest experience with them, finds no difficulty, and I apprehend none. Their industry and fertility, and all other points, can be fully tested next season. No one can fail to be charmed with their beauty.—*Ehrick Parmly, New York.*

For the American Bee Journal.

Building Combs and Storing Honey.

EDITOR JOURNAL:—Bees will commence at the base of frames of a certain size to construct combs. About the middle of July last, I put on my hives a number of boxes containing each fourteen frames, each nine inches deep, with the top slat provided with the usual triangular strip, but without any guide-combs, nor did I rub them with beeswax. The result was that in four-fifths of these boxes, thus put on for surplus honey, the combs were built from the bottom upwards, in the usual shape, with the exception that the combs thus built were from two to three inches thick and very irregular.

Another class of frames was six and a half inches deep, but precisely similar in all other respects. All of these contained good-shaped combs, built in the usual way. Now, as I am a subscriber for your most valuable JOURNAL, and have perused its pages in vain for something on the subject, giving the experience of others, I have been led to try a number of experiments, and have come to the conclusion that more surplus honey can be obtained by the use of a set of shallow frames than can be obtained in the same length of time, from a hive arranged with a crown board on which four or six small boxes are placed. And for this reason: the crown-board has a tendency to confine the animal heat, too much to the bee-chamber below. Bees require a certain amount of animal heat to enable them to build comb after the wax has been secreted in the rings of the abdomen, and there is a deficiency of this heat in the surplus boxes thus placed.

I have used the Langstroth movable comb hive for several years, and found that though with the crown-board and small box arrangement, I had very populous colonies with the bee-chamber well-stored with the precious nectar, still from some unknown cause, the bees frequently failed to store surplus honey in the top boxes. I am aware it will be said that some of the requisite conditions were wanting. I have not been without bees for the last sixteen years, and for some seven years past, I have been a tolerably close observer; and if any of the needed conditions were wanting, I have not been able to discover it.

The best mode of securing surplus honey should engross the attention of the bee-keeping public. I would not be understood as discouraging the propagation of the Italian and other varieties of the honey bee, the multiplication of colonies, &c. That is all right and proper, and just as it should be, for very much depends on it. It is in fact one of the essential elements of success. The principles of apiculture have been as well defined as they could be; but the practice is still in its infancy, at least in the western and northwestern States.

JAMES MCMULLEN.

OSKALOOSA, IOWA.

The construction of the combs of a bee-hive is a miracle which overwhelms our faculties.

KIRBY.

[For the American Bee Journal.]

Voluntary Contractility of the Queen Bee at Oviposition.

Mr. Eeitor:—It is to be greatly lamented that the skilful fisherman, Dzierzon, has hauled the biggest fishes from the mellifluous river of Beedom. Yet we need not wonder at his success when we consider that his "great big" bait, seasoned with the penetrating *genetic* flavor of teutonic scrutiny, has made it impossible for the numerous shoals of minnows and other small fry to get a tenable bite upon it. Occasionally a good-sized sucker makes a "glorious nibble," and holds on to it till it appears a considerable distance above the water, when whap! plumb it tumbles down again, and vanishing affrighted below the surface, leaves nothing very notable behind it, but a dashing splash and momentary ripple. While fragmentary remains of this unwieldy bait still tantalize the hungry voracity of the small fry below the opaque surface of this mystic river, the *fragmental dash* of impurity in Italian bess on shore, in a similar manner still baffles the hungry imagination of every theoretic apiarian.

Various, and to all appearance, very plausible theories have repeatedly been presented to explain the origin of this objectionable dash, and inasmuch as in these dashing *latter days*, dashing objections are levelled against the well-established *Dzierzon theory*, I feel constrained also to dash down my views upon this interesting subject, not so much with the intention to instruct the reader as to show him that, like the good-sized sucker above alluded to, I have a pretty good hold upon the bait and expect to be hauled above water, not caring whether I will tumble down again or not, for an ablution now and then hurts nobody. If I should be doomed to sink, may my body rest in peace with Dzierzon.

Taking Dzierzon's whole theory of reproduction in bees, as deduced from the hypothesis that *in copulation the ovaries of the queen are not fecundated*, to be correct, it must be easily perceived that all the eggs in both sections of the ovarium remains drone eggs before they glide past the mouth of the spermatheca filled with the drone's semen. The question now naturally arises: How, then, if all the eggs must glide past the mouth of the spermatheca, does it happen that some eggs develope into drones, some into workers, and some into queens?

Dzierzon, indeed, tells us that the queen has it in her power to deposite an egg just as it comes from the ovary, as drone-laying mothers lay it, or by the action of the spermatheca past which it must glide, to invest it with a *higher potency of fertility*, &c., and that she does so instinctively, induced *by the width of the cell to be furnished*. But he does not attempt to say *how this is done*. The link is wanting here, and the difficulty of knowing *how this is done*, does not, I think, require us to ransack nature for analogy to solve the difficulty to supply this link. No, Mr. Editor, how ingenious Mr. Wagner's theory upon the subject may at first appear to the majority of readers, it is open to two very serious objections *First*, It directly contravenes proposition third of Dzierzon's theory, as set forth in the celebrated Apistical Letters of the Baron of Berlepsch, which definitely states that "the queen possesses the *ability* to lay male or female eggs *at pleasure*, as the particular cell she is at any time supplying may require." *Second*, It leaves unexplained the well-known fact that the queen *does* lay eggs in cells not more than one-eighth of an inch high, when and where, of course, no involuntary compression can take place.

Viewed from the standpoint of the first objection, it denies *voluntability* to the queen; whereas, viewed from the standpoint of the second objection, this voluntability the queen visibly insects upon. The fact that Mr. Quinby comes to the assistance with his "*may be*," that, just at the moment of the passage of the egg, or the act of laying, the contents of the abdomen are crowded downward, and it enlarges sufficiently to touch the sides of a cell only one-eighth of an inch deep, only casts the will of the queen upon contingencies; whereas, these prove only the exception to the general rule of the queen's manner of ovipositing. As if aware of the insufficiency of his supposition, Mr. Quinby advances an argument of his own, which, instead of throwing light upon Mr. Wagner's theory, only throws the veil of lurid offuscation around his argument. He adds: "When I first saw the smallest queen that I ever raised, *whose body was even smaller than a worker's*, it occurred to me at once that if she ever laid, it would be a test of the principle. Her body being small, it could not, of course, be compressed like others, and a large portion of her progeny would prove to be drones in worker cells. The result was just what I expected—*one-half were drones.*" And here, Mr. Editor, with due deference to Mr. Wagner's theory and Mr. Quinby's writings, permit me to state that, in my opinion, if there ever was such a queen, not only *half* but *all, her progeny must have been drones in worker cells*, since "the terminal point of the drone's abdomen is inserted in the sheath of the queen's vagina before the extrusion and inversion occur—thus affording the terminal section with its horns, the middle section, and the bulb containing the spermatophore, time to assume their proper relative position within the cavity of the vagina," it were, I should think, altogether impossible that the male genetalia, if they could pass the external orifice of a queen even smaller than a worker, should find room to intrude and invert in the vagina of such a diminutive queen. Now, if reasoning in the language of men, whose reputation for learning and skill in entomotomistical demonstrations is unquestioned, be not purposely sophistic, I would like to be told where *the test to establish this principle* of involuntary compression in the empiric statement of Mr. Quinby is to be looked for.

Nor is it necessary to entertain Mr. Harbison's incongruous views in explaining the impregnation or rather fertilization of the queen's eggs. Mr. Harbison, it is true, admits that the queen exercises certain knowledge, will, or understanding in her manner of depositing eggs. But, instead of endeavoring to give birth to an entirely new and unobjectionable theory, by murdering an old one he has involved himself in a maze altogether inextricable.

He contents himself with believing that a sufficient portion of the seminal fluid to cause the egg to generate is incorporated with it in its formation; that one of the ovaries will produce drones, and the other workers; that the anomaly of drone-laying queens arises from the imperfect development of that part of the ovaries which produces eggs for workers; that the queen has, indeed, a seminal sac, although anatomists have repeatedly demonstrated that this sac is surrounded by "a muscular tissue, by the *contraction* of which *compression* is effected and the contents forced out through the discharge pipe into the oviduct." And yet Mr. H. does not believe that the queen has a *full control* over the outlets of the bilateral oviducts, of which no anatomist has ever, to my knowledge, intimated that they were capable of either muscular contraction or compression. What a monumental faith the originator of such a theory as this must have possessed? And were it not for the above-mentioned second objection he has raised against Mr. Wagner's theory, we might, without compunction, have passed him by with a most benignant apiarian smile.

Now, it need not be denied that all motion and locomotion in animated nature depends directly upon the will in each individual creature, as much as the free exercise of the will in each individuality upon certain instinct or reason, to account for the *ability* of the queen to lay her eggs in either drone or worker-cells *at pleasure.* For I cannot discover the least propriety, necessity, or adaptability of means to end in denying the queen her legitimate instinctive power—voluntary contractility.

If, however, it be said that the point at issue—the movement of the muscles comes under the head of *organic* contractility, I reply that organic contractility in the point at issue, is directly depending upon the will of the queen also, and that that apparent encroachment of will upon organic movement is *the very link* which has so long and so sedulously been sought after.

How, then, is the fertilization of the queen's eggs effected? It is an undeniable truth, that in animated nature, *respiration* as well as the *call of nature*, can, in a measure, be suspended at will. The former we suspend at every act of swallowing, and the latter we *may* suspend at every act of voiding. Now, it requires no great stretch of thought to believe that by the sense of feeling, the queen in the act of ovipositing exactly knows when an egg reaches the proximity of the spermatheca, and that by the sense of seeing she is equally well enabled to distinguish a drone cell from a worker cell. If, then, it be her pleasure to supply a drone cell, she applies *a little voluntary contractility*, closes the discharge-pipe of the spermatheca, and allows the egg, just as it comes from the egg-bed, to glide past it into the cell, where, as all admit, it will develope into a drone. *On the contrary, should she please to supply a worker cell, she causes the egg not to glide past the spermatheca, but directly before its discharge-pipe, when, by the repititious acts of voluntary contractility and recidivation, she fertilizes this egg and all succeeding ones to be laid in similar cells, with more or less seminal filaments, according to the more or less perfect conformation and fulness of her spermatheca, and the more or less complete control she has over the muscular net-work surrounding the same.* All eggs thus fertilized become worker eggs, and when deposited into worker cells, are developed into workers or queens, just as the good people of the hive *then may will it.*

The link is inserted. In my opinion, it fills the theoretic vacuity of Dzierzon's theory.

In order, therefore, to give the objector to this theory time to collect and arrange his arguments against it, I may say that by it we can account for the origin and multiform appearance of the *fragmental dash* of impurity in Italian bees, without the assistance of either Mr. Kirby's "*smashed up drones*" *theory*, or Mr. Thomas' theory of *absorption and circulation*, and thus proceed to state the indisputable fact that there are to be found in Italy, as well as in Switzerland and Germany, bees of the common variety.

That *some black bees* there as well as here and elsewhere, *do make at times* their appearance simultaneously with three-banded, two-banded, and one-banded bees in one and the same hive, need not here be denied by either Prof. Mona, Mr. Uhle, or Mr. Grimm. For it just so happens that I am acquainted from my youth up with a gentleman not far off, who raises no queens for sale, who is reliable and who claims "to be qualified to form an opinion respecting Italian bees" also, and who, likewise, (I can sustain the allegation myself) has seen Italian bees in their native clime a long while before either Mr. Uhle or Mr. Grimm had wound their way over the Alps. The trouble with which Italian bees in Italy *might be* purified from any *objectionable impurity*, would be, comparatively speaking, nothing. But please, sir, without imputing any motives of deception or dishonesty to any person, to recollect that scientific bee-culture in Italy is of quite recent date, and comparatively speaking, *nothing either.*

Now, if I may be permitted to state the fact that strolling dealers in Italian bees and perambulating agents of foreign exporters, in order to obtain the wished-for number of queens, are compelled to buy their bees for many miles around their respective bee depots from peasants, who, ignorant as a class to such a degree, that in order to disprove the fact of the queen's laying eggs at all, they could at best quote Anthony Conova's treatise on bees, and say with him they don't believe it because they have never discovered any egg shells on the bottom board or before the hive, it must be evident to the least reflecting that this much complained of fragmental dash of impurity is not at once and altogether eradicated by the simple act of purchase and exportation.

Will not Prof. Lewis Bonner and the other semi-Italian gentleman who bought up thirty stocks of Italian bees for Mr. Parsons, of Flushing, in 1859–60, give me a lift "*in the rear?*" I assure them that although this peculiarly convenient locality be not at all "*protected by an ample application of Prof. Flander's celebrated bee-charm,*" they need not fear to be stung by either *American* or *imported* "*high-breds.*" I know it.

Therefore, unless imported Italian queens were raised in Italy, Germany, or Switzerland, and tested with a view to *impeccability of temper and distinctive coloring there likewise;* and unless after importation, the owner of such confine his exclusive attention to rearing and testing a manageable number of daughters to be purified and kept pure by an established criterion, the purchaser *may find* that his *black-streaked* and ring-speckled pure Italian queen will produce workers that can stand no test of purity whatever.

In regard to the remarks of Mr. Thomas upon my Impeccability of Temper, I have, therefore, at this time nothing to say, further than that in Europe, *my test* constitutes the rule and not the exception with Italian bees; and that were it not for this fact, I should not have dared to advance it as a reliable test of purity in America. Hence I must again insist that if it be at all desirable to obtain bees possessing this admirable trait, the honest breeder of Italian queens (without disposing of his *Lowe*-bred drones), should test his workers upon the scale of impeccability.

Mr. Thomas, in my opinion, reasons very cogently. I congratulate him upon what he has advanced, and if the stubbern facts above alluded to can be *rocked to sleep*, and the positiveness of his conclusions thus be converted into truths, I shall be ready to *accept and* acknowledge them of course. If truth has suffered on my side, I stand ready at any moment to retract.

I would also beg your leave, Mr. Editor, to inform Mr. Thomas, in conjunction with what precedes, that I will not *sell* him any queen at any price; but if he thinks that my impeccability of temper is worthy of preservation, he may give me a friendly call in person, whenever it may please him, with the express purpose of examining my limited number of Italian stocks, and then, if he can find any one of them "that will not sting him," he may take its queen along, as Prof. Alsatius would say, "*free gratis for nothing at all, except a puff or two in his county paper.*"

If this affectionate tender of generosity does not characterize me in the estimation of Mr. Thomas as a most singularly true and careful bee-raiser, I would not risk to send him the *Italian fly;* for how can *I* know that my most precious effluvia and impeccibility of temper is applicable to *his* psychical temperament and physical constitution.

In conclusion, permit me to remark that I am neither a professional physiologist or anatomist; that microscopic observation, however serviceable in demonstrating lifeless organism, may still fail to assign its appropriate office to the "wheel within the wheel" in animate nature; and that there exists on either side of the lens, organic animation which can never be brought within its scope.

With many respects to all, I remain,

Prof. F. Varro.

Washington, Pa., Nov. 13, 1867.

"A bee," says Dr. Paley, "amongst the flowers in spring, when it is occupied without intermission in collecting pollen for its young or honey for its associates, is one of the cheerfullest objects that can be looked upon. Its life appears to be all enjoyment—so busy and so pleased.

[From the Steubenville Herald.]

Profit of Italian Bees.

Mr. Editor: Having but four Italian colonies to commence with at the commencement of summer, three of which were pure and one hybrid, and using the three that were genuine to rear queens to supply my apiary, it was impossible for me to form a correct estimate of their capacity to store honey when left alone, as compared with the black bee. But the following statement of the product of a single colony in the apiary of T. L. McLean, which came under my observation, and for the truth of which I appeal to Mr. McLean himself, seems to confirm what has already been asserted, that they will accumulate in the same locality twice the amount of honey that the black bee will. At the commencement of spring Mr. T. L. McLean's apiary consisted of one Italian colony with some seventeen black colonies. On the 27th of May his Italian colony swarmed, beating his black bees two or three weeks and was done swarming before they commenced. It sent off three swarms, and in sixteen days the first swarm swarmed. This swarm with the rest, filled good-sized boxes to the bottom, and together with the parent hive, stored eighty pounds of surplus honey. Now the least figure that an Italian colony sells at in the common box hive, at any place where they are sold, that I know of, is twenty dollars. At this price the swarms themselves would amount to eighty dollars, and eighty pounds of surplus honey at twenty-five cents a pound would amount to twenty dollars. This, with the price of the swarms, will foot up the snug little sum of one hundred dollars profit on a single colony of Italian bees. For information concerning the superiority of the Italian bee over our common kind, as also, the best method of its safe introduction into black colonies, I would refer your readers to the American Bee Journal, published monthly, at two dollars a year, by Samuel Wagner, Washington, D. C. This journal is a medium through which practical bee-keepers communicate their experience, and its editor is one of the most theoretical as well as practical bee-keepers in this country. To those who are pursuing bee culture for profit, this journal is of inestimable value.

John L. McLean.

Richmond, Ohio.

The cells of the combs as built by the bees have all a slight inclination upwards, the better to retain the honey stored in them in its liquid state. In attaching guide-combs to the frames care must therefore be taken, especially when broad pieces of comb are employed, to give these the proper adjustment—that is, to preserve the upward inclination of the cells in each piece. This will greatly facilitate the further extension of the combs by the bees. The bees will indeed use combs improperly adjusted in this particular, though with some reluctance evidently; and there is always more or less tendency to irregularity.

☞ Send us names of bye-keepers with their post office address.

THE AMERICAN BEE JOURNAL.

WASHINGTON, DECEMBER, 1867.

☞ THE AMERICAN BEE JOURNAL is now published monthly, in the City of Washington, (D. C.,) at $2 per annum. All communications should be addressed to the Editor, at that place.

☞ Our present supply being exhausted, we cannot furnish new subscribers with copies of Nos. 1, 2, and 3, volume 3, of the BEE JOURNAL. We shall have those numbers reprinted at an early day, and send to those who have ordered them.

☞ Want of room and time compels us to defer the publication of several articles intended for this number of the BEE JOURNAL. Communications should be in our hands before the 15th of the month, to enable us to avail ourselves of them conveniently for the next succeeding issue, as we desire to have the BEE JOURNAL published regularly at the beginning of each month.

☞ We received lately from a correspondent in West Virginia, a specimen of a plant known there by the trivial names of Iron or Brush weed, and which is said to be "an important honey plant" in that section—coming into bloom about the first of September and continuing until frost; the honey gathered from it being of good quality."

We submitted the specimen to Prof. Porter, who says it is "the *Aster ericoides*, *L.*, which is exceedingly common along roadsides and in neglected pastures. I have never seen bees working much upon it, and greatly question its honey-bearing qualities. But there is one Aster which richly deserves attention in this respect. It is often cultivated as an ornamental plant, and produces a great profusion of reddish purple flower-heads of large size late in autumn; and I have frequently noticed bees working most diligently upon them, when nearly everything else had yielded to the blighting influence of the frost. It is a perennial and will grow well in ordinary mould. It is the *Aster Novæ Angliæ*, or New England Aster."

☞ The following note respecting the *breathing test*, was received from Mr. Root just as this number of the JOURNAL was going to press:

"Perhaps it is due to the readers of the JOURNAL to state that the Breathing Test, described in the September number, does not answer in cold or cool weather.

"When the article was written I had not seen a failure. But since in trying them in cool weather, they manifest considerable excitement, especially if tried suddenly. However, I have never yet had the full bloods sting me at such times, although they act very much as if they would. Still there is a marked difference in their behavior from the hybrid bees.

"I should have made this statement sooner, but awaited the result from others.

"MEDINA, OHIO. "A. I. ROOT."

[For the American Bee Journal.]

Fixed Frames.

MR. EDITOR:—I noticed in the October number of the JOURNAL an article on bee-hives, in which the writer says he cannot see the objection to keeping the frames all fixed at equal distances. Now, as I am only a beginner myself, I should perhaps not say much; but as facts have a value far above theory, I will state my objections to such frames.

In the first place, if frames with closed tops are used, the bees will glue them to each other with propolis their whole length, so as to make it very difficult to open a hive, especially in cool weather, which hardens the propolis and makes it adhere very firmly to the frames. In prying them apart you cannot then avoid jarring the combs, which greatly enrages the bees; whereas in the Langstroth hive, the operation is performed without any jarring whatever.

Again, when you come to shut the hive, you cannot avoid pinching and crushing bees, in swinging or shoving the tops together, which of course also irritates the colony. But in the Langstroth hive, where the frames are separate throughout, there is no danger of killing a single bee. Nor, as no two combs are built just alike, can you conveniently change combs from hive to hive, as is readily done where the Langstroth hive is used. In hives having frames with closed tops, every frame has to come to a certain place, allowing no chance for adjusting waving or bulging combs; while in the Langstroth hive you can make ample room for any comb, however waving it may be.

Again, suppose you want to examine a comb in the middle or back part of the hive, you have to move every frame till you come to it, whether there be one or a dozen; whereas in the Langstroth hive, such an operation is quickly and easily performed.

I have been using the last-named hive for two seasons, and think it incomparably superior to any other with which I am acquainted. Hoping I have made my objection to the kind of frames referred, sufficiently plain and intelligible, I will stop.

Yours respectfully, H. S. S.
EVANSBURG, PA.

The hive-bee sometimes manifests an antipathy to particular individuals, whom it attacks and wounds without provocation.

[For the American Bee Journal.]

Experience of a Novice.—No. 9.

Before we start in pursuit of "giantess" and her retinue, perhaps I might remark that I forthwith looked up all my remaining fertile queens and clipped one wing of each, (clipping a leg I have decided to be unnecessary). After having thus made all the rest safe, I took up the pursuit.

It was towards evening as I started off across the meadows, and the air was filled with perfume from the many blossoms which have always possessed a double charm for me since I have made bees a study, although they were fascinating before. As I passed a piece of rising ground the sound of humming bees seemed to fill the air with a continuous roar, as though it were full of them, although none could be seen. It was some time before I could understand it, until I came to the conclusion that it was occasioned by the bees from town passing to and fro from the acres of snow-white clover, which seemed to increase as I passed further on. I had been looking for Italians, and had noticed them occasionally at work until I got about a mile from my apiary, where they almost ceased to appear, although black bees were in great plenty. Half a mile further on, as I neared a piece of woods in a direct line in which my swarm had flown, I found the clover blossoms almost exclusively covered with hybrids. The clover was so plenty about there as to present almost a perfect mass of white blossoms. And on going home in a different direction, I found the hybrids gave place to black bees at about such a distance, thus settling the question that the truant swarm was in that vicinity.

Perhaps I should have remarked that I had previously examined my books, and found that Langstroth mentions a similar case of bees going off without clustering, and that they were found by taking the line on which they were last seen to move.

In this case I had taken the direction by climbing to the top of the house and noticing where they would strike the forest in passing over the house of the friend before-mentioned. As I had seen them at work, if I had not found their precise location, I returned home well satisfied with the progress made and my walk.

In a few days I again visited the locality with bee-box and honey, in order to line them as per directions in Bee-Keeper's Text Book. But though I caught a number, they did not seem to care for honey, and would not notice it even when I poked their noses into it. They had evidently made up their minds not to be *lined*.

On further consultation of the Text Book, I learned that I must wait until forage was not so plenty. I did so, but as I waited until the white clover was all gone, I could not find any bees to start with; and after several unsuccessful attempts, concluded that "bee hunting" was not my *forte*. I was going to abandon them in despair, when in August we discovered Italians at work in a buckwheat field near there. Bringing the bee-box again into requisition, we soon had a line in the desired direction, and presently a host of bees going and coming on a "bee-line." However, they did not all strike the woods at the same point, and after looking in vain at all the trees within a quarter of a mile, we decided to "cross line."

We had left the Text Book at home this time, but thought we remembered the directions. Catching a boxful of bees and carrying them about a quarter of a mile, we let one out to see which way he would go dome. After circling around some time, he struck off northeast. Thinking we had not come far enough, we went another quarter of a mile and let out some more. They moved northeast also. Well, we reasoned, bees of course know which way home is, and we will take them far enough, so that they will have to come back. So we tried half a mile. Still northeast. Another quarter of a mile, and on letting the balance out, as they too settled in a northeast direction, my companion (who only weighs 240 pounds avoirdupois,) declined going further, as he was sure they had located somewhere on the opposite shore of Lake Erie.

Home again. Some of our acquaintances shook their heads, remarking what a crazy fellow that ——— was, chasing after a swarm of bees, *they* knowing all the time he would never find them. They (the bees) had been advertised in the *Gazette* when they first went off, so that everybody knew about it.

But *we* were going to have them just for spite—see if we didn't.

We engaged the services of an experienced bee-hunter, and prepared anew for the siege. Being reinforced with a bottle of oil of anise according to his direction, we soon had half a swarm at work, and whilst we amused ourselves in carrying the bait along in the direction from which they came, he went to examine a piece of woods beyond those in which we had been looking when they first went into the trees. It was not long before we heard the welcome news that he had "found them."

Swinging our hats with loud huzzas for our success, we approached the tree. Sure enough, we found them in the top of a towering oak, going in and out as much at home as if they had a perfect right to be there.

In going from the buckwheat field they had been compelled to pass a small corner of woods, and as some had gone over it and others around it, it had created the confusion in regard to their locality.

A suggestion from any of our readers as to how we can get "giantess" down without damage to her majesty, would be esteemed a rare favor by NOVICE.

P. S.—As we propose leaving her till spring, there will be ample time for hints on the subject.

The economy of a nest of *wasps* differs from that of the *bees*, in that the eggs are laid not by a single mother or queen, but by several; and that these mothers take the same care as the workers in feeding the young grubs.

☞Send us names of bee-keepers with their post office address.

[For the American Bee Journal.]

Patent Hives.

Mr. Langstroth somewhere in his valuable work on "The Hive and Honey Bee," (a note at the foot of page 61, third edition, I believe,) cautions persons purchasing patent rights "to be careful to find out just what is covered by the patent device, which they are careful to conceal, while they are loud in their praise of other parts which any one has a right to use." He might add—"or which in some cases are covered by patents of other parties."

Acting under this advice, I determined this spring to write to a widely known Western firm, engaged in vending a patent hive, which they claim to be ahead of anything yet out, and ask them to forward me a copy of the claims under their patent.

They replied that they had no printed copies of their claims, not having time to prepare them, and were too busy to make a written copy; but in the fall would have some printed and send me one; (which I have not yet received) and wound up by advising me to get their "book and be satisfied, as all the points chiefly dwelt on, are covered by the patent."

Now it happens that I *had* read their book, and this was my very reason for writing to them, as I was not *satisfied* by any means. The points that seemed to me "chiefly dwelt on" were—

1st. *Movable frames.* As they could not possibly claim these, we will say nothing more about them.

2d. *Upright form of hive.* Now as upright hives seem, from all accounts, to have been used as long as bees have been domesticated, we *suppose* they do not claim this.

3d. *Side-opening.* German apiarians have used this feature for upwards of thirty years, and Mr. Langstroth tested it before he fixed on hives with a movable cover, as the most desirable form; (see October number of the Bee Journal); and however loose the workings of the Patent Office may be, a patent would hardly be granted on so old an invention.

4th. *The use of two boxes for surplus honey, one above the other*, to induce the bees to work more readily in empty boxes after full ones are removed. This is an idea of Mr. Quinby's, published by him (Mr. Q.) long since.

5th. The hive being *weather proof.* This is a most absurd thing to claim, for almost any hive, if well made, would be so.

6th. The arrangement for *ventilation* and *nucleus swarming.* This may be patented, but how are we to know?

7th. The *entrance regulator.* If this is covered, it is certainly not worth much to any one owning the Langstroth right, as it is much more complicated, and we think less useful than the triangular blocks.

There are several other points "dwelt on," but as we have already written more than are intended, they must remain unnoticed.

You may judge from the above how near a man can *guess* at what he pays his money for. Yet, strange to say, from certificates of Express agents and postmasters, published by the firm, it would seem that they find plenty of customers. We would like to know if any of them were furnished with more reliable information than that with which we were expected to be *satisfied.*

The plea that they had not time to prepare copies of the claims under their patent, is hardly credible, when we see the quantities of circulars, pamphlets, &c., which they distribute throughout the country. It is assuredly part of a man's business to inform his customers what they are buying from him. Mr. Langstroth, whose health is very poor, and who has as much business as any apiarian, still manages to find time to prepare copies of his claims, although he cannot write his new book, which all his friends are anxiously waiting for.

We have written this not from a wish to injure any one, but simply to warn bee-keepers against purchasing rights from *any one* without first knowing precisely what those rights are.. If any one feels agrieved by our remarks, we shall be most happy to have him answer us through the medium of the Bee Journal, so that its readers can understand the merits of the case.

D. M. Worthington.

Elkridge, Md., Nov. 8, 1867.

P. S.—I have no interest in any patent, save an individual right in the Langstroth hive.

D. M. W.

Preservation of Empty Combs.

New, clean, and straight empty combs are of great importance and value in bee-culture, where movable frames are used, and should be carefully secured from the attacks of vermin and insects. Mice and the bacon beetle, (*Dermestes lardarius*) though not wont to devour them, are yet prone to gnaw and damage them. The most formidable enemy against which we have to guard is the larva of the wax-moth. If once in possession of a comb, these nauseous worms multiply rapidly, and subsisting on the wax, soon reduce the whole to a filthy mass of web-entangled excrement. Combs which have never contained brood and are free from pollen or bee-bread, are not so liable to be attacked by the wax-worm, as brood comb long used and stored with pollen.

Empty combs should be suspended separately in an airy upper chamber, and frequently inspected. A mere glance usually suffices to detect the presence of larvæ in these combs, and if taken in hand immediately the grubs may easily be removed without injury to the comb by inserting a splinter of wood in the cell infested, twirling it around a few times, and then withdrawing it with the worm and its web. Repeated examination, however, is necessary, because the cells may contain eggs, which do not all hatch simultaneously, but disclose from time to time, as the state of the atmosphere around is more or less propitious. The most effectual preventive is to suspend the combs in a tight box, and exposing them there to the fumes of brimstone. They should be well aired again before given to the bees.

AMERICAN BEE JOURNAL.

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Parthenogenesis in the Honey Bee.

BY PROF. C. T. E. VON SIEBOLD.

[CONCLUSION.]

Notwithstanding the experiments hitherto made in a practical way by which Dzierzon's theory has acquired the right of asserting its justice, we cannot reject the demand that, by means of direct experiments, we must acquire the conviction that *the drone eggs require no fertilization for their development, whilst the same eggs, in order to furnish female or worker bees, must be fecundated;* for it is only by such strict scientific proofs that this new theory will acquire a firm and secure basis.

Since the production of fishes by the artificial fecundation of the eggs had been carried on of late years with such fortunate results, it was natural to think whether it was not possible to establish the correctness of Dzierzon's theory incontrovertibly by the artificial impregnation of the bees' eggs. But this mode of proof was necessarily given up again at once as impracticable, for whoever submits the eggs of bees to a close examination will immediately see that these eggs, from their extreme delicacy, are quite unfitted for such experiments. There would be no possibility of extracting mature eggs uninjured from the ovaries, in order to transfer them either unfecundated or artificially impregnated into cells to be taken care of by the bees. Nor would these delicate eggs bear without injury the contact of a brush, however fine, moistened with the semen of male bees, as would be required for artificial impregnation. Prof. Leuckart proposed to employ eggs which had already been laid as drone eggs in drone cells, and to fertilize them artificially afterwards, in order in this way to decide the question, whether we should succeed by artificial impregnation in developing such eggs into workers or queens. He called attention, however, at the same time, to the difficulties which are opposed to the success of this experiment. He justly pointed out that only very fresh and newly deposited drone-eggs should be made use of for artificial fecundation, for as soon as the thin albuminous coating, with which the eggs of insects are laid, becomes dry, which certainly takes place quickly on deposited eggs, the semen employed for artificial impregnation can no longer penetrate through the pores of the egg shell into the interior of the egg, by which means alone as will be shown hereafter, the fertilization of the eggs of insects can be completed. From the importance of the object which would be attained by these experiments, difficult as they are to carry out, I heartily join in Leuckart's wish that such experiments should be undertaken by many hands; perhaps one or the other of the experimenters would be so fortunate by the concurrence of several favorable accidents as to attain what from Dzierzon's theory must *a priori* be expected as the result. From the preceding statements it follows that the artificial impregnation of bees' eggs could not as yet be employed in favor of Dzierzon's theory.

Very different hopes were awakened in this respect when we became acquainted with the existence and office of the micropyle of the eggs of insects. Since Leuckart and Meissner have seen the spermatozoids penetrate the egg-shells through their peculiar openings into the interior of the eggs of insects, we must say beforehand that if Dzierzon's theory proves to be correct, this process can only be observed in those eggs of bees which are destined for evolution of females or workers; and that in the eggs which remain unfecundated, from which only drones are developed, no spermatozoids will penetrate through the micropyle, whilst the micropylar apparatus must exist in exactly the same degree of development in all these eggs, as all eggs are originally of one and the same kind and nature.

Those eggs of bees which have to undergo a fertilization are fecundated at the moment when they slip past the orifice of the seminal duct of the receptacle within the oviduct, (vagina). At this moment, as we may certainly suppose, some spermatozoa are pressed forth out of the efferent duct of the seminal receptacle, and these in this way by means of their mobility find an opportunity of penetrating through the micropylar apparatus into the interior of the egg. That the act of fecundation of the insect egg actually takes place at the point of the vagina just mentioned, was asserted by me in the year 1837, and confirmed by an observation which I made upon

Musca vomitoria. In *Musca vomitoria* and its allies, which had not yet completed the business of oviposition, or perhaps had been disturbed in it and had not immediately met with another suitable place for the deposition of their eggs, the eggs occuring in the ovarian tubes and in the oviduct differed in the following extremely interesting manner. The egg which was fixed between the vulva and the orifice of the seminal receptacle, had already begun to develope itself and contained an embryo, whilst the egg found in the oviduct above the orifice of the seminal duct, which was perfectly equal in size with the preceding one, did not betray a trace of the commencement of the development of the embryo, any more than the eggs contained in the Fallopian tubes. In such female flies the seminal receptacle always contained mobile spermatozoa. At that time we contented ourselves in the explanation of the process of fecundation, with the supposition that the contact of the spermatozoids sufficed to incite the egg to development. More recently we have been compelled to drop this theory of contact, since we have been able to trace the penetration of the spermatozoids into the interior of the egg. The process of impregnation will now have to be more precisely conceived in the following manner: The fecundation and capability of the development of the egg are not produced merely by the immediate contact of the semen with the egg, but the elementary constituents of the semen, the mobile seminal filaments must actually slip into the interior of the egg, very probably to become destroyed here first, to be dissolved and then mixed with the elementary constituents of the egg.[*] For this purpose the eggs of insects possess a micropylar apparatus, that is to say, one or more small apertures at one of the poles, through which the spermatozoids must get into the interior as far as the yelk of the egg, in order to complete the act of fecundation.

Leuckart was the first to set himself the task of ascertaining by direct observation, to what modifications the penetration of the spermatozoids through the micropylar apparatus of the eggs of the bee would be subjected according to Dzierzon's theory. For this purpose he went to Seebach at the end of May last year, in order to be able to make use of the most abundant selection of the necessary objects for investigation. A better opportunity for such investigations could be presented to him nowhere else than in the immediate vicinity of the grand bee-establishment at Seebach, in which, however, we must also take into account the disinterested liberality with which Herr von Berlepsch sacrificed his apiarian riches for the purposes of such physiological and anatomical investigations.

Leuckart's intention had already been announced by Berlepsch in the *Bienenzeitung*, and I was therefore extremely anxious to know what results Leuckart would obtain from these Seebach studies. These have been recently published by Leuckart in the above-mentioned journal, from which I will here communicate the most important of the results.

Leuckart was, of course, obliged in the first place to turn his particular attention to the micropylar apparatus of the eggs of bees, of which he gave the following description: "As in the eggs of most insects we distinguish in those of bees two membranes, an inner one the so-called vitelline membrane, and an outer one the egg-shell or the chorion. Both membranes are extremely thin and delicate: even the outer one, which otherwise (especially in those eggs which are deposited freely) is of considerable thickness and firmness. The vitelline membrane is structureless, whilst the chorion is covered with a delicate hexagonal lattice work, as with a network, as far as the hinder (lower) flattened end of the egg which serves for its attachment. The micropylar apparatus lies at the anterior or superior pole of the egg, which is last excluded during oviposition (and afterwards contains the head of the young larva. At this point where the ridges of the chorionic network run together, we see a little fan-shaped figure (of about 1-70 millim.) with about twelve rays. The rays of which the face is composed form the optical expression for the same number of micropylar canals which run under the surface of the chorion. At their lower diverging ends these canals are open externally, whilst they open into the internal space of the eggs with their opposite extremities. The structure is exactly the same as in a number of other hymenoptera, but with this distinction, that in this case the micropylar canals are most extraordinarily thin and delicate, so that we can hardly convince ourselves with certainty of their real nature, and at the first glance might be inclined to regard the rays as ridges, such as also occur on other parts of the chorion. The canals can hardly be more than one five-thousandth part of a millimetre in diameter, though certainly still sufficient to allow the passage of a seminal filament. During the last period of its stay in the ovary, the bee's egg receives another external coating of an albuminous nature, which, indeed, is reduced to almost nothing on the anterior (superior) half, but gradually thickens posteriorly, and acquires a very considerable development at the flattened posterior (inferior) pole. This albuminous deposite serves for the attachment of the egg to the wall of the cell." Although I do not quite agree with the Leuckartian conception of the micropylar apparatus of the bee's eggs, and am especially compelled to regard the above-mentioned micropylar canals as something else, a detailed criticism of this representation of Leuckart's would lead me too far, and I therefore reserve this for another occasion, and will make use of the expression *micropylar apparatus*, without connecting therewith exactly the same idea as that which has been formed of it by Leuckart. The possibility of success in the before-mentioned artificial impregnation must depend as Leuckart has very justly observed, upon the thin albuminous coating of the eggs of bees; for as soon as this albuminous coat has dried, which will certainly be the case within a few minutes of the deposition of the eggs in the waxen cells, the orifices of the micropylar apparatus will be plastered over with it, so that the seminal filaments will be prevented from penetrating into the interior of the egg.

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[*] The cases of true parthenogenesis are, of course, to be understood as forming the exceptions to this rule.

Leuckart's statement, also, that it is impossible, from the external condition of the bee's egg, to arrive at any conclusion as to the sex of the bee which is to be developed in it, is important, and I can fully confirm it.

Leuckart now hoped "by the assistance of the microscope to ascertain the presence or absence of the seminal filaments upon the micropylar apparatus of freshly-deposited drone-eggs, and from this to draw a conclusion as to their fecundation or non-fecundation," as he knew "that in many cases it is not difficult to discover the seminal filaments single or in strings, sometimes even in very considerable ones, in the albuminous layer covering the micropyle in freshly laid eggs, and even to witness the act of slipping in through the micropyle." Unfortunately these hopes were not fulfilled, for Leuckart was compelled to admit that what he observed is not sufficient for the decision of the question, and only possesses some value in as far as Dzierzon's hypothesis is not directly contradicted by it.

Leuckart accounts for the failure of his design as follows: "The bee is one of those insects which, in fecundation, only deposite very few seminal filaments, perhaps in many cases only a single one, upon their eggs. Important and significant as this circumstance is for the practical breeding of bees, as only by it does it become possible that the queen, notwithstanding her immense fertility, can lay eggs for years together without exhausting the contents of her seminal receptacle—it is evident that this is equally unfavorable and unwelcome to the physiologist who is in search of these filaments. To this, we may further add that in bee's eggs the seminal filaments have not to penetrate through a thick albuminous layer before reaching the chorion, as is so frequently the case in other insects; but that they are deposited almost immediately on the micropylar apparatus, and consequently can penetrate through its canals in a very short time. Lastly, if we consider the difficulties which are thrown in the way of microscopic preparation of the bee's egg, by the great elasticity and delicate texture of the chorion, we can hardly complain of an observer if he has not arrived at any satisfactory result in this case. I admit freely that the investigation of the bee's egg has been the most difficult of all the numerous investigations of this kind which I have undertaken during the last two summers."

By an unlucky chance Leuckart, whilst in Seebach, found no opportunity of examining perfectly fresh-laid bee's eggs, as at the time when Leuckart undertook these investigations, Von Berlepsch could, by no means, bring a queen to deposite her eggs. As the result of these Seebach studies, therefore, Leuckart could only furnish the editor of the *Bienenzeitung* with the following information: "But you wish then to know to what my investigations have led in general? I reply that on two occasions only I met with some undoubted seminal filaments upon the micropyle of bees' eggs. On one occasion a single filament; on the other several, four or five, (and yet I have most carefully examined more than fifty bees' eggs). On both occasions it was upon worker-eggs that I found the seminal filaments. On drone eggs I have never been able to distinguish a single seminal filament, although I probably examined more drone-eggs than worker-eggs, and amongst these such as had been laid at the utmost a quarter of an hour previously. You see the result is doubtful. At all events it appears rather to speak in favor of than against Dzierzon. But I must repeat that this appearance is possibly deceptive. In the interest of science it would delight me exceedingly if other observers should be more fortunate than I have been in this respect."

For the satisfaction of Leuckart, I may state here that I have actually been more fortunate than him, and that I have seen what his eyes did not succeed in beholding. "Until" (so Leuckart closes his statements relating to this subject), "either by experiments or by direct observation, the strict proof is obtained that it is only the eggs of the female bees that are impregnated, the question as to the causality of sex in bees remains an open one. Theoretical and other reasons may henceforth induce us either to support or oppose Dzierzon, and we may increase the materials for the settlement of this question in an indirect way—its decision cannot possibly be brought about thereby." I have, in fact, been able to furnish by direct observation that evidence which must have been required by science as alone sufficient for the establishment of Dzierzon's theory. How far I may consider myself justified in this assertion, may be ascertained from the following statemets:

Although I knew that Leuckart was about to commence the above-mentioned investigations at Seebach, I had also long before undertaken to make similar investigations in the interest of science. Without knowing that Leuckart had already carried out his Seebach studies and without being acquainted with the results which had been obtained from them, I also went to Seebach in the middle of August last year, because I was convinced that such investigations could only be undertaken by the aid of the abundant materials which would there stand at my command by the acknowledged complaisance of Herr von Berlepsch, I certainly entertained but little hope of attaining my end, as the season of the year was already too far advanced for such investigations. On the 21st of August I was received by Herr von Berlepsch with the assurance, calculated to inspire very little encouragement, that I would probably find it difficult to meet with the necessary material which I required for my investigations at so late a period of the summer, and therefore that I had little chance of solving the problem before me, especially as Leuckart had been there at Whitsuntide, and therefore at a more favorable season of the year, but had departed without attaining his object, and confessed to Von Berlepsch that questions relating to Dzierzon's theory could not be solved by the microscope, on account of the very great difficulties which were to be overcome in the investigations to be made for that purpose. Nevertheless, I did not allow myself to be deterred from entering upon these investigations.

I was, however, actually astonished at the bee material which offered itself to me in Seebach, for the masses of bee colonies as well as their judicious arrangement, so favorable to observations of every kind, surpassed all my expectations. I found a hundred and four Dzierzon hives overflowing with honey and bees, destined for hybernation, and indeed distributed in various ways in eight places in a spacious orchard, amongst which I was particularly surprised at the pavilion containing twenty-eight bee-hives, already frequently referred to in the *Bienenzeitung*. The distance of these eight bee establishments from each other was never more than forty feet Rhenish. Amongst these hives there were nine genuine Italian colonies of bees, the number of which might have been much greater, if, as Herr von Berlepsch stated, seventy Italian mothers had not been furnished by him to other bee-keepers, and the hives generally were considerably reduced by the various scientific experiments. What has been of particular service to Von Berlepsch in his bee-keeping, is the assistance of his servant Gunther, who being endowed with excellent talents, has been instructed by Berlepsch himself in the mystery of bee-keeping, and has approved himself in a distinguished manner.

I immediately set to work and examined a great number of female eggs, with which the great bee establishment of Herr von Berlepsch still furnished me in large quantities. It first occurred to me to make myself well acquainted with the organization of the eggs of bees, so as not to be exposed to delusions or errors subsequently in seeking for the spermatozoids. It was only after I had actually ascertained the structure of the egg envelopes, the micropylar apparatus, and the yelk, and practiced myself in the preparation of the eggs of bees, that I turned my attention to the spermatozoids, by whose presence or absence the principal decision was to be given. Above all the most exact acquaintance was required with the individual ridges of the lattice work of the egg-shell, which is composed of irregular hexagons, as well as with the folds of the vitelline membrane accidentally produced during examination, so as not to confound these things with spermatozoids which had become motionless.

After I had in this way made myself sufficiently familiar with the examination of the eggs of bees, I had a comb brought to me at ten o'clock in the morning of the 22d of August, containing female eggs which had been deposited at the utmost an hour before. I might expect beforehand that no trace of spermatozoids would be recognizable externally on these eggs. I therefore directed all my attention to their contents, and hoped to discover the spermatozoids which had already penetrated through the micropyle in the interior of the eggs. I soon convinced myself that there was no possibility of discovering the delicate seminal filaments between the granulovesicular yelk masses. The linear object to be sought for was too subtle to be capable of discovery with certainty amongst the many mutually crossing outlines of the yelk vesicles. After various vain endeavors to render the interior of the bee's egg accessible to the inquiring eye, I came at last to the idea of employing an artifice, which I soon had acquired by practice, and which allowed me to survey at least a portion of the inner space of the bee's eggs with great clearness and tranquility. I crushed a bee's egg quite gently with a very thin glass plate in such a manner that it was ruptured at its *lower* pole opposite the micropylar apparatus, and the yelk gradually flowed out at this spot, by which process a clear empty space was produced at the upper pole within the micropylar apparatus, between the egg envelopes and the yelk, which was retiring downwards. I directed my attention very particularly to this empty space, which I saw slowly produced under the microscope during the effusion of the yelk. The production of such a preparation, of course was not always successful, for sometimes the yelk flowed out of the ruptured envelopes without the production of this empty space; the yelk also sometimes remained diffused in the upper part and allowed no certain judgment as to the presence or absence of seminal filaments. An error in the crushing of the egg, a little too much pressure upon it, or perhaps also a peculiar less tenacious consistency of the yelk, probably caused the contents of the yelk to retire in evefy direction from the pressure, and therefore also to press upwards against the micropylar apparatus.

From the above-mentioned comb I examined ten eggs, which I succeeded in transferring, *uninjured* from their cells, upon an object glass, which, from the delicacy of these eggs, is always a matter of difficulty. The result of their microscopic examination was as follows:

The first female egg exhibited nothing remarkable. In the interior of the second egg to my great delight, I observed three distinct but motionless seminal filaments within the empty space which had been produced at the superior pole of the egg by the flowing out of the yelk through the inferior pole. In a third egg after the retirement of the yelk, I saw in the superior space of the egg which had become empty, a single motionless seminal filament. In a fourth egg I again observed three motionless seminal filaments at the same spot. A fifth egg prepared in the same way, exhibited no seminal filaments. A sixth and seventh had probably been too strongly squeezed in their preparation; the necessary empty space could not be produced in the interior of the egg at its superior pole, for which reason I regarded these preparations as of no use for investigation. In an eighth and ninth egg successfully prepared, I again saw a single motionless filament in the superior empty space of the cavity of the egg. In the tenth egg the preparation was quite unsuccessful. This comb, with female eggs, after being carefully preserved in a room, was made use of for the continuation of these investigations at eight o'clock in the morning of the 23d of August. An eleventh egg was spoiled during preparation, as also a twelfth. A thirteenth egg was in an extremely interesting condition. After it had been twenty-two hours out of the bee-hive and had been successfully prepared in the way above described, it exhibited two spermatozoids in the clear empty space between the egg membranes and the yelk, which had retired on the crushing of the egg. *One of the seminal filaments performed very lively tortuous* *movements.* The second filament was rigid, but adhered firmly to the other seminal filament, and was thus moved by its movements. These movements were first seen by me at about half-past eight, and were also observed by Von Berlepsch and Gunther, and by two other witnesses. Three minutes afterwards the seminal filaments were still active. The preparation was then put by and not again examined under the microscope for fifteen minutes. The movements of the first seminal filament had then ceased also, but both spermatozoids, although motionless, were still distinguishable in the same spot. A fourteenth egg furnished no result, its preparation being unsuccessful. In a fifteenth four distinct but motionless spermatozoids were discoverable in the space which had become empty during the preparation between the envelopes and the retreating yelk.

On the same day another comb with female eggs was removed from another bee-hive; they might at the utmost have been twelve hours old. The investigations continued with these eggs gave the following results. A sixteenth egg, the preparation of which turned out well, exhibited no seminal filaments in its interior. With the seventeenth egg the preparation was unsuccessful. An eighteenth egg contained three seminal filaments in the spot above mentioned; *one of these was active.* In the nineteenth and twentieth eggs the preparation was unsuccessful. The twenty-first contained two motionless seminal filaments, as did also the twenty-second. In the twenty-third egg on the contrary, I could distinguish four motionless seminal filaments. With the twenty-fourth and twenty-fifth eggs the preparation was unsuccessful. The twenty-sixth and twenty-seventh again exhibited each a single motionless filament, and the twenty-eighth, two of them. The four following eggs all showed only a single motionless seminal filament. The examination of the thirty-third egg was again unsuccessful. The thirty-fourth and thirty-fifth eggs exhibited three motionless spermatozoids, and the thirty-sixth egg examined by me contained *one active* and three motionless seminal filaments. In the thirty-seventh and thirty-eighth eggs, I could only perceive a motionless spermatozoid; in the thirty-ninth, fortieth, and forty-first on the contrary, I was able to discover two rigid spermatozoids.

On the 23d of August a third comb furnished with female eggs, was also employed for investigation, the eggs in which had only just been deposited. These eggs, however, did not show themselves favorable to the above-described mode of investigation employed by me, because the yelk would not detach itself so easily from the vitelline membrane after the rupture of the envelopes. But when I succeeded in producing the empty space between the envelopes of the egg and the yelk in these eggs, I often found it possible to discover spermatozoids in their interior. Not to weary the reader, I will only enumerate a portion of these investigations in their order: The forty-third egg allowed a motionless seminal filament to be detected, sitting externally on the micropylar apparatus. The forty-fourth and forty-fifth eggs furnished no results from unsuccessful preparation. The examination of these was not repeated until seven o'clock in the morning of the 24th of August, when these deposited eggs were fifteen hours old. The forty-sixth egg contained several coiled but motionless spermatozoids. In the forty-seventh egg I was able to discover one motionless seminal filament. With the forty-eighth the preparation was unsuccessful, and with the forty-ninth and fiftieth, I was obliged to leave it doubtful whether the object which might have been taken for a seminal filament, was such in reality. Both the fifty-first and fifty-second eggs allowed a motionless seminal filament to be clearly distinguished in the empty space, when the yelk had retracted itself downward from the micropylar apparatus by the rupture of the egg shells.

If I sum up the observations just referred to, they furnish on the whole a very favorable result, considering the difficulties of the investigation, for I have also convinced myself that these investigations of the egg of the bee are, as Leuckart has very justly asserted, amongst the most difficult of all investigations of the kind. Amongst the fifty-two female bee-eggs examined by me with the greatest care and conscientiously, thirty furnished a positive result; that is to say, in thirty I could prove the existence of seminal filaments, in which movements could be detected in three eggs. Of the other twenty-two eggs, twelve were unsuccessful in their preparation. At the same time I may also indicate particularly that the observations with positive and negative results followed each other quite irregularly, but alternating at very short intervals, which probably was only dependent upon the favorable or unfavorable consequences of my preparation of the eggs employed for observation. If the question is to be raised why Leuckart was not so fortunate as to see what I have succeeded in seeing, I can make no other answer, but that probably the different mode followed by us in our investigation is to be blamed for Leuckart's want of success. Berlepsch informed me that Leuckart did not examine the contents of the eggs by the careful compression of the bee's egg, but that he confined himself to submitting the eggs in a perfectly uninjured state to an external examination.

It is certainly to my mode of investigation alone that I am indebted for the successful result of these observations, which were made with an excellent microscope of Kellner's. The careful rupture of the egg membrane effected always by me, must prove an extremely important manipulation, for by this alone it was possible evidently to isolate the delicate seminal filaments which had penetrated into the cavity of the eggs and become concealed by the yelk mass, as after penetrating into the egg they probably continue adhering for some time to the micropylar apparatus by their caudal extremity and remain behind, isolated in the upper empty portion of the cavity of the egg during the issue of the yelk mass after the rupture of the membranes.

Above all things, however, it was of consequence to me that I should be able to examine male eggs (drone eggs) also in exactly the same way; and Herr von Berlepsch actually procured for me the means of doing this, although at first he had given me but little hope of obtaining such drone eggs even in small numbers. It was truly a *chef-d' œuvre* to obtain drone eggs at so late a season: how my acute and experienced friend, as it were, compelled a queen to lay male eggs, the reader will be able to understand from what follows.

In No. 79 of his bee hives, Herr von Berlepsch possessed a queen, which he knew to be near her death, as her bees had been constantly constructing royal cells since the end of June, and the queen furnished these with eggs by which her loss might be replaced. Berlepsch, however, had not permitted the larvæ in these cells to come to exclusion, and thus this aged mother was still alive when I arrived at Seebach and inquired for drone eggs. A little while before this queen had laid drone eggs, but Berlepsch had destroyed this drone-brood also as being useless. At last the workers had enough of it, and commenced no more cells. Berlepsch's object in this case was to determine how long the life of a queen might be prolonged artificially. When I came to Seebach this queen was still laying an occasional egg. On the 21st of August Gunther received the charge to feed the hive, No. 79, in the evening with fluid honey. The next evening (August 23d) two combs with covered worker-brood and between the two an empty drone-comb, were suspended in this hive. The following morning (August 23d) there were twenty-seven drone-eggs in this drone-comb, and about sixty worker eggs in open cells of the worker combs. Berlepsch had carefully ascertained previously that not a single egg was present in the open cells of both the foreign worker-combs when suspended in the experimental hive.

I examined these twenty-seven drone-eggs which might have been about twelve hours old, and which agreed perfectly both in their appearance and organization with the female eggs, with the same care and by the same method with which I had treated the female eggs, and *did not find one seminal filament in any one of the eggs, either externally or internally.* I must also add that only the seventh, thirteenth, and twenty-third eggs were unsuccessfully prepared. In all the rest of these drone-eggs the yelk retreated slowly and completely from the upper pole of the egg-envelopes, after bursting the membranes; the desired empty clear space between the micropylar apparatus and the retreating yelk was produced in the interior of these eggs, so that if seminal filaments had been present in them, they certainly would not have escaped my searching and inquisitive eye. In order to be quite satisfied as to this remarkable negative result, and to obtain the full signification of it, several female eggs of the same queen which had furnished these drone eggs were examined for comparison; for the objection might certainly have been raised, that this queen might have laid nothing but barren eggs, as being already weakened by age and near her death, she might have had no more spermatozoids in her seminal receptacle. Nevertheless, many of these eggs contained seminal filaments; they were the twenty-seven eggs already mentioned by me, namely: the sixteenth to the forty-second eggs.

To this result of my Seebach investigations, which proves the correctness of Dzierzon's theory by direct observations, I may also add that Herr von Berlepsch has lately informed me by letter, that this queen subsequently after my departure from Seebach, also laid female eggs, from which workers were developed; but she herself only died on the 19th of September, 1855.

[For the American Bee Journal.]

Italian Queens.

Mr. Editor:—Allow me to give you a few jottings of my experience in apiculture.

I commenced in a small way a number of years ago, to keep a few stocks of bees. At that time it was but little trouble to take care of them, as they almost invariably did well in any kind of hive or gum; for the country was then new and wild flowers abundant. But soon there was trouble in the camp. The bee-moth began its ravages among the stocks, and in a short time my prosperous colonies dwindled away; and it was only by the greatest care that I managed to keep my stocks from being entirely destroyed. Thus bee culture became neglected, as it was a source of vexation and no profit.

Something had to be done, and we are indebted to the practical investigations of Huber, Dzierzon, and others in Europe, and of the Rev. L. L. Langstroth and others in America; and their improvements in moveable comb hives have proved that success in bee culture does not depend upon luck, but upon proper management. And now the careful apiarian can increase his colonies at pleasure, and in ordinary seasons look for a good supply of surplus honey to pay him for his labor.

Last spring being convinced that the Italian bees were more prolific and more easily managed than the black bees, I commenced to Italianize, and had the pleasure to see at the end of the season that I had increased my stock to twice the number, all in good condition for going into winter quarters. I purchased my Italian queens from Mr. Adam Grimm, of Jefferson, Wisconsin, and they proved to be just as he represented them, very fine. Mr. Grimm wrote to me since his return from Italy, where he had been to purchase a lot of Italian queens of Prof. Mona; and as I wanted to see queens just from their native Italy, I concluded to make Mr. Grimm a visit. I went and found him busy in preparing his extensive apiary for the introduction of the queens just imported by him. I had the pleasure of seeing all his imported queens, and found them invariably *dark-colored;* (with two or three exceptions) yet they showed distinctly the yellow stripes peculiar to the Italians, and the workers accompanying them were beautifully marked. Mr. Grimm's apiary is perhaps the largest in the West. At this time he has six hundred and six colonies. His home apiary numbers over three hundred colonies. The other apiary is two miles and a half distant. All the colonies seemed to be in good wintering condition. Mr. G. uses the Langstroth hive. I am satisfied that if there are any pure Italian bees in this country, Mr. Grimm has them; and if Mr. Victim and others who are so afraid of being *victimized* would purchase a queen of Mr. G., with his guarantee of purity, I would wager a red apple that he or they would get what they want. I stayed with Mr. G. two days and left for home, taking with me several of his beautiful queens for my own apiary in Ohio.

S. SANFORD.

LIMA, OHIO, Oct. 29, 1867.

Kentucky Bee-Keepers' Association.

LEXINGTON, KY., Nov. 25, 1867.

EDITOR BEE JOURNAL:—Pursuant to a call issued some time ago, quite a number of bee-keepers met at the Court-house, in this city, on the 20th instant, and organized a KENTUCKY BEE KEEPERS' ASSOCIATION. Inclosed you will find an account of the proceedings.

D. BURBANK.

MEETING OF BEE KEEPERS.

LEXINGTON, Nov. 20, 1867.

Pursuant to notice previously given through the papers, quite a large number of bee keepers from various parts of the State met at the Court-house in this city, and on motion, R. T. Dillard, D. D., was called to the Chair, and J. W. Reynolds appointed Secretary.

Mr. D. Burbank, in a few pertinent remarks, stated the object of the meeting to be for the purpose of organizing an association of all interested in bee culture, and consulting as to the best means of encouraging and advancing this important interest.

Mr. Burbank moved the appointment of a committee to arrange business for the consideration of the convention, which motion was adopted.

Dr. John Dillard, Messrs. R. A. Broadhurst, Wade, Egbert, Burbank, and Brown were appointed said committee.

R. A. Broadhurst, Principal of the Female Orphan School at Midway, addressed the convention on the importance and profitableness of bee keeping, fortifying his conclusions by examples under his own experience; demonstrating beyond doubt that a farmer cannot lay out the small capital required to commence the business in any manner to secure as certain and lucrative return. He described his apiary on the plan he pursued, and imparted a great amount of valuable information concerning the subject.

We do not pretend to give anything like a full and accurate report of the speaker's instructive and entertaining remarks. From his experience with the common and Italian bees, he regarded the latter as most profitable.

Dr. John Dillard said he commenced keeping bees about five years ago, with nine swarms of bees, using the common hives. By a short experience, after losing numerous swarms, he adopted the Langstroth hive, and he is convinced that it is the hive best adapted for bee keepers here and elsewhere. He has carefully observed the Italian bees, their habits, &c., and is fully satisfied that they are by far the most profitable. They commence working earlier in the season and continue later. He has observed that they work better on the second crop of red clover than the common bees.

Capt. N. Craig, of Scott, addressed the meeting at length. He has been a practical bee keeper for fifty years, and approves of Langstroth's system of bee-keeping; thinks the Italian the most profitable bee. It is a longer lived and a better worker. He thinks yellow pine the best material for making hives; thinks the frames in the interior should be of white pine or yellow poplar. In regard to moths, the best remedy is cleanliness of hives. He prefers the Langstroth movable comb hive to any other that he has used! Thinks buckwheat good bee pasture.

The Rev. Dr. Dillard made some remarks as to the pleasure and profits of bee-keeping. Has been a bee-keeper for fifty years. Thinks Langstroth's the best hive. Said persons in the highest ranks in Prussia and other countries in Europe devote much attention to bee-keeping.

The committee to arrange business for the convention reported the following officers for a permanent organization of a Kentucky Bee Keepers' Association: Dr. John Dillard, of Fayette, President; R. A. Broadhurst, of Midway, S. F. Drane, of Eminence, William J. Moore, of Danville, N. A. Rapier, of New Haven, D. L. Adair, of Hawesville, and Cyrus Simmons, of Bowling Green, Vice Presidents; Wesley Spencer, Secretary, and D. Burbank, Treasurer.

The committee also reported various subjects for discussion, only one of which was considered for want of time, viz: the best mode of wintering bees.

Dr. John Dillard gave his experience; was of opinion that the most important matter was to prevent dampness, has used straw in the tops of his hives to absorb the moisture from the respiration of the bees, and keep them warm, but thinks corn cobs, being non-conductors of heat and great absorbants of moisture, the best thing he has tried; he removes the honey boards and caps, and packs the vacant space above the frames with cobs.

S. C. Brown corroborated the remarks of Dr. Dillard, and spoke at length upon the advantages and disadvantages of wintering bees in dark cellars or buildings, or burying them, &c.

David Butcher preferred wintering bees on their summer stands. His plan is to place over the hives large boxes and fill the space between the hives and the inside of the boxes with saw dust.

Dr. George S. Savage moved that when this meeting adjourn, it be to meet at this place on the second Tuesday of December, at 11 o'clock A. M. Agreed to.

D. Burbank moved the appointment of a committee to draft a constitution for the association and report at the next meeting. Adopted.

The chair appointed as the committee D. Burbank, J. M. Tipton, Dr. John Dillard, and Dr. R. J. Spurr.

Dr. Savage moved the appointment of a committee to procure a speaker to address the association at the next meeting. Adopted.

D. Burbank and R. A. Broadhurst were appointed said committee.

The convention then adjourned.

J. W. Reynolds, Secretary.

[For the American Bee Journal.]

Italian Bee-Breeding.

What is wanted is light color in all the bees, strong constitutions, good workers, not disposed to sting if well managed.

To obtain light colors, raise from the lightest colored parents of both sides; avoid breeding in-and-in further than to get the color, as it has a tendency to weakness if carried too far.

To improve the constitution and workers, breed from the best not near related.

To improve the disposition, breed from parents that show these qualities most. This object can be arrived at more speedily by breeding in-and-in, as it will take only a few generations to make them too docile to defend themselves at all. Therefore if carried too far in that direction, like an overgrown branch of a tree, it fails the first ill-wind.

To succeed, have control over the hive, bees, and combs. Let such queens as are selected lay in the drone-combs, and no others be allowed to produce drones at all; and the drone mothers no queens, unless the object is to breed in-and-in—which is a poor plan if the desired qualities can be got without.

The breeding should be done generally by one pair of queens for an entire apiary each year. Many generations of queens can be raised after all other drones are killed, if the hives containing the drones wanted are kept queenless.

James M. Marvin.

St. Charles, Ill.

[For the American Bee Journal.]

Regicidal Attacks.

In rearing queens last summer, at first one-third of the number were lost by regicidal attacks. This was more frequently the case in nuclei containing young bees exclusively. Returning from her wedding flight, the queen has acquired a peculiar odor, and is hence not readily recognized by her companions, but received and treated as a stranger—being enclosed by angry bees in a ball or cluster about the size of a hen's egg. A whiff of smoke will scatter these bees. The bees composing this angry ball will sting each other, and are dragged out in front of the hive. This gives the careful apiarian notice of what is going on within. Caging the queen over night within the hive is necessary to insure her safety.

Delhi. Davis.

☞Send us names of bee-keepers with their post office address.

[For the American Bee Journal.]

Questions by Querist.—No. 3.

Perhaps some of the Journal readers have been looking for more questions by Querist. If so, they shall be gratified. Querist is highly pleased with many of the answers to his questions in No. 2, and hopes those in this number will be as promptly attended to.

The most of us are satisfied that *frame hives* are better than *box hives* for bee-keepers in general; and as that point seems to be pretty well settled, let us now settle two more points, viz: the *best size* and the *best form* for hives.

These two features are inherent in *all* bee hives and are not covered by a *patent*, nor can they be, for they have been public property as long at least as bees have been domesticated. I hope, therefore, that no writer who proposes to discuss the points named will make use of the word *patent*, for the purpose of bringing before our notice some particular patent hive that may be worthless or otherwise.

Those who have given these points—*size* and *form*—careful thought, will find that each of them may require an article by itself, and that it will then be as long as most of us are willing to read. Some of the Journal readers may think that Quinby, Langstroth, and others, have given us the best *size* for a hive. It may be so, but I have my doubts about it. Two thousand cubic inches, or about a bushel, may be as they claim the *best* size; but if so, let us have the reasons why.

I presume no one will claim that the best *shape* has been settled among all classes of bee-keepers, for if this were true, we would not find so many forms of hives in use. Now there must be some particular shape that will secure the bee-keeper more advantages than any other. It may be necessary to discuss the best shape for general purposes—that is, for those who winter their bees in the open air; and also the best shape of hive for those who winter in suitable repositories. Latitude may also have something to do with the shape of hives, as bees south of latitude 38° would winter in the open air in hives of less depth than several degrees north of it.

Querist.

[For the American Bee Journal.]

Straight Combs.

I use dividing boards with a few holes bored through them. They are placed in the hive the same as the frames; first a frame and then a board. Put pieces of combs on the frames, fastened with melted beeswax on the underside of the frame. The bees will lengthen them perfectly straight.

Delhi. Davis.

There is a species of butterfly found at the Cape of Good Hope which, when seized or attacked, defends itself like the honey-bee by stinging. It is the only one of that class of insects known to be provided with a sting. It is there called the *bee-moth*.

[For the Bee Journal.]

How about Pure Italians?

DEAR JOURNAL:—I want some light on the Italian bee question. I have purchased two Italian queens, and have raised a dozen. My bees now are all Italians and hybrids, or they are all hybrids. How am I to know which? Only about five out of every six of the workers from the purchased queens show the three yellow bands; the other one-sixth show only two. On the other hand, the workers from the queens which I raised, vary greatly. In most of the hives, about one-sixth of them show the three bands, and the other five-sixths show only two distinctly. As to temper, they are all about alike—a little more amiable than the black bees. I found, when nearly the whole colony was hybrid, that still the black bees annoyed me more than the hybrids; yet my bees will all sting.

Cannot some one who has eyes, who can count a hundred, and who has not made up his mind on the distinguishing marks of Italians, visit some apiary where imported queens are kept, and examine carefully a large number of workers, both of imported queens and of American born queens, and report the result to the Journal. There is truth in the matter, if we can only get it. One misfortune is that the observations of many persons are worthless. You cannot trust their eyes, and must receive with allowance their honest statements. I lately called to see a man who has long kept Italian bees. I wanted light. He informed me that there was no doubt about all pure Italians showing the three bands. I went to *see*. Putting his hand on a hive he said, "here is a queen that I am very sure produces pure workers." I stooped down and commenced examining carefully the bees at the entrance. I saw at once that about one-fourth of them showed only two yellow bands. I told him so. He would not believe. I pointed out the bees. He caught one to pull its abdomen and show me that *the yellow was there, but covered up under one of the folds*. It was hard to find. But still he is confident that all pure Italians *show distinctly* the three yellow bands; and he is equally confident that he has pure Italians. I believe he writes sometimes for the Journal. There is no use in such persons as my friend going to see other people's bees. They know, without looking, that all Italians show the three marks. I hope they do, and that the question will soon be settled.

Many persons have the opportunity to examine the workers produced from imported queens. There can be no doubt about their purity. Will some one have the goodness to make the examination, and report *the facts* in the Journal. Let him tell us how many bees he has examined, and how many show distinctly the three yellow bands. And, above all, let him keep his eyes open for those which show but two bands. I have a notion that even if there be such among pure Italians, they are harder to see than those which have the three bands. Indeed it is quite probable that some people could not see them at all. But I want light. Who will give it?

INQUIRER.

[For the American Bee Journal.]

Experience of a Novice.—No. 10.

DEAR BEE JOURNAL:—The following items of experience may be acceptable:

During the dry weather the past fall there was considerable robbing among the bees in our vicinity.

About the middle of August, I observed one evening two swarms of black bees that I had bought this season to be very busy till nearly dark. Supposing that some other bees were robbing them, I proceeded to contract the entrance; but soon saw that the returning bees, instead of being light, were so heavy that in many cases they fell to the ground before reaching the hive, and on killing a few found them gorged with honey. Next morning I found them again at work, and finally lined them to a neighbor's, where one of his best hives, as he called it, was literally black with bees, which we eventually found coming from four different apiaries. Of course the honey was soon gone; but the remarkable part of it was that not an Italian bee was seen there, although I had twenty-three Italian stocks, and only the two black ones. The Italians were at the time at work on red clover, and on nothing else that we could discover.

Mr. Editor, do you not think it rather harsh and ungentlemanly for a correspondent to make the assertion that he does not believe any one ever had seen Italian bees work freely on red clover, after the contributions we have had on the subject? Why should beekeepers use so little forbearance with each other? It seems to me that we can develope real facts from actual experience, without so much picking at each other and doubting each other's statements. For instance, Professor Varro reasoning to show that Mr. Quinby *could not* have had a fertile queen smaller than a worker. Now, Mr. Editor, I did raise a queen *much smaller than an ordinary worker*. A number of my friends saw her, and laughingly called her my "Bantam queen." Contrary to our expectation, she met a drone and was seen to return with the usual drone appendage. She afterwards laid eggs which produced fine Italian workers; but she laid so few that, after keeping her about three months, she was replaced by a more fertile queen. We do not think her eggs produced any drones at all. She was raised in cool weather, in a small nucleus, and was nearly all of a jet black, although raised from my first Langstroth queen.

To return to the robbing. The Italians *did* learn it later in the fall. After buckwheat was gone, all queenless hives, for a mile or more around, were greedily appropriated; and the number was quite considerable, so that one stock of hybrids worked some in boxes on stolen honey. This gave the Italians rather a bad name among some; but in no case could I learn that there was any fighting, and most of the hives despoiled were already occupied by the moth worm.

On one occasion I bought a box hive of black bees that would make no attempt to protect their stores; and after trying every way to stir up their anger and make them show fight, in despair I shook about a teacupful of young Italians into the hive one evening, and by contracting the entrance these few young bees next morning repelled a host of black robbers that had got well started too, as they had previously carried off nearly half of the contents.

I have no fear of Italians being robbed, whether queenless or not.

As an experiment I put two black queens in one hive, and after half an hour found both well treated, as the stranger had been from the first; but they were on separate frames. In fact I do not know whether I removed the one I put in, or the original. Could not queens be introduced in that way, without the bees being conscious of any loss at all?

A second experiment of the same kind resulted in finding one queen dead at the entrance of the hive after an hour's time. I could not tell which one, as I had not marked the stranger.

At the third experiment, I found the two queens both well treated, on the same side of the same comb, after about an hour. The bees were working but very little at the time.

One more item and I am through.

As I have been at considerable expense in trying both the Langstroth and the American hive, I was deeply interested in two articles on hives in the December number of the Bee Journal, and must say the ideas given me in them are worth more than all I have paid for the Journal many times over. The first year the bees were in the American hive, I had but little trouble in opening them. But a few days ago, in trying to open some of my heavy stocks in cool weather, I found much trouble in getting the movable side out, and more in getting the frames apart, and finally so exasperated the bees in closing them that they came up to the top of the frames, so that I had to resort to smoke—something I very seldom do. Again, in attempting to exchange some thick heavy combs for light thin ones, I was obliged to give it up on account of the frames being kept at equal distances.

If I succeed in wintering in the Langstroth hive this winter, as well as the American hive, I think I shall conclude that Mr. Langstroth knew what he was doing when he made his hives the shape he did.

I certainly have had more surplus honey from the Langstroth hives this year than from the American, but have been trying in vain to find some other reason for it. I used the shallow boxes made for the American hive, put them directly on the frames, and put an empty one under when half full. I have had no trouble with brood in the boxes, but in some cases some pollen.

This winter I have made an inch and a half hole in the end of the Langstroth caps, covered with wire cloth, and then filled the cap closely with straw, replacing the whole after removing the honey-board. I always winter in the open air. At present—December 10—they are dry and healthy.

An earnest desire for improvement, and good will among all beekeepers, is the prayer of

Novice.

[For the American Bee Journal.]

Proposals Wanted.

In the October number of the Journal, page 73, we find an article under the above heading. Well, friend Maryin, we will propose.

First. If we understand you, you intimate that hybrids are better workers than pure Italians. If so, why not be satisfied with them? Or if not in possession of them, why not wish proposals for them?

Secondly. We can furnish you with such a queen as will reproduce others like herself to an indefinite number, and all counterparts of herself, particularly if all made in one mould.

Thirdly. A queen as yellow as beaten gold, and which will reproduce others in any number, of course for the same price.

Fourthly. As to the prolificness of this queen we cannot speak. That would perhaps depend on the purse of the purchaser. As to the workers and drones they would certainly be yellow, like the queen, unless we should fancy to have their feathers dyed. As to their docility, we can speak in the highest terms; but of their locomotive powers we cannot say much. The price will certainly be high; and why should it not be for such extra stock? We cannot state the exact sum until we consult a goldsmith.

But, seriously, with articles like that referred to, breeders of Italian queens have much trouble. They have a tendency to produce doubt as to the purity of Italian bees, in the minds of many who contemplate introducing the Italian variety in their apiaries. Why not be satisfied with the Italians as we have them? Yea, we should be grateful for a kind of bees that so much interest us, and adds so largely charms of apiarian knowledge; and not only this, but adds at the same time to our pecuniary resources.

Again we say, why inquire for a thing that has no existence? Perhaps, indeed, the article was intended for such persons as come before us boasting great things and displaying cuts, &c. If so, we say *amen!* but it should have been intimated. R. B. Oldt.

New Berlin, Pa.

☞Where it is intended to perform an operation on a populous colony, which is likely to require much time, it should be undertaken about noon on a clear and calm day, when many of the bees are abroad. The combs are then less crowded, and the honey-laden bees returning from their foraging excursions, are less irritable than under other circumstances. A still better plan is to remove the hive to some distance and set an empty or decoy hive in its place on the stand, till the intended operation has been performed.

☞Send us names of bee-keepers with their post office address.

[For the American Bee Journal.]

Various Items.

Editor Bee Journal:—After sending you my letter of September 12th, from Bellinzona, Canton Tessin, I visited a great number of apiaries in the neighborhood of Bellinzona, where Prof. Mona bought swarms to get the queens he was constantly sending off. I had thus an opportunity to see and compare about thirty more queens, besides the hundred which the Professor had packed or was packing for me. I am positive that there were not two of them exactly alike in color and size. I have seen all shades of color, from one whose abdomen was brown-yellow or leather colored, except the point, down to perfect black ones. The large-sized queens were usually handsomer than the smaller ones, which were either perfectly black, or had but very narrow yellow rings, where the workers have their three rings. The yellow rings were narrower on these queens, than on their worker progeny. With all this difference of color and size in queens, I could not find a perceptible difference as far as the workers are concerned. When I supposed I had found a difference, and examined the swarm more closely, I could quickly satisfy myself that the workers I saw at the entrance of the hive were merely older bees than those I saw in front of neighboring hives. Being fully satisfied that, at least as far as I went, no common or black bees could be found, I concluded to examine drones only, thereafter. All the drones I was able to find at that time, (Sept. 16—18) were of course old ones, and I could not perceive the least difference. They seemed to me to be smaller than the common black drones, and differed so little in color from each other, that an inexperienced observer would have mistaken them for black drones. All the difference consisted in three very narrow stripes on the edge of the first three rings of the abdomen, where the worker has the black edge to the yellow bands. By very close examination, however, I found some brown spots on those parts of the first three rings, where the workers have the yellow bands. Mr. Uhle told me that these spots are more visible when the drones are young.

Comparing my own former view with the statements of Mr. Dzierzon (who, by the way, does not claim that he ever saw Italy, or the bees there), that the Italian bee in Italy itself is not perfectly pure, with my present observations, I must concede that I was mistaken. I am now fully satisfied that the Italian bee, at least in the neighborhood where I have examined it, is a pure distinct breed—distinct from the black bee, however much the queens may differ in color and size. If this were not so, how could the workers of a perfectly black queen (one of those which I showed to Dr. S. Sanford, of Limâ, Ohio,) be exactly of the same color as those of the brightest queen? Much rather do I now believe that the golden-colored queens are in some way bastardized. Dr. Ziwanski writes, in his annual report to the German Bee-Keepers' Convention, for 1865, "Whoever expects an original Italian queen light or yellow colored, deceives himself. They are all of them more dark than light, almost black, and one who does not know them, would find it difficult to discover any difference, nay, would perhaps find a common queen lighter colored than an Italian. The lighter and the more splendidly yellow an Italian queen looks (those from Pollegio never look so), the greater ground there is for suspicion." All the doughters of originally imported queens are dark again, but produce the prettiest workers. Mr. Dathe, who, however, never saw Italy nor the bees there, agrees with Dzierzon, who considers only those queens pure that are perfectly yellow, and then says, on the next page of his pamphlet, "When we declare the pretty yellow colored Italian race as the pure full-blood race, we do not mean to say that the darker or browner colored race is less valuable in a practical view. We find everywhere in nature the lighter color more noble and tender, the darker more durable. *So are the darker queens less tender.*" Travelers in that portion of the country where the striped Ligurian bee is found, reported in former years in the German Bienenzeitung, that the nicest colored bees were found in the neighborhood of Lago Maggiore. Shall we then take the Italian bees found in this part of Italy as the standard of Italian bees? Or shall we accept as the standard Dzierzon's bees, who succeeded in propagating higher colored queens from the original imported stock? As I have more than forty queens which I imported from Italy, safely introduced in my apiary, I shall have the means of making more careful examinations next summer. If I do not lose them during the winter, I will in due time send further reports.

Prof. Mona's Experience on Nice Queens.

Conversing with Prof. Mona, one day, about the beautiful golden yellow colored queens sold in America, he related the following: "We had a pretty nice queen this spring, and intended to breed from her, as our customers in Germany often ordered nice colored queens; but we had so many crippled and deficient queens from her progeny, a number of which never laid an egg, and also three whose eggs never hatched, that we rejected her as unfit to breed from. We are convinced that the darker queens are hardier and more prolific." I must add that on my return from Europe, I found in my apiary four of those pretty yellow queens whose eggs would never hatch. One of them was destroyed in the presence of Mr. Crowfoot, of Hartford, Wisconsin.

A Colony of Italian Bees in a very Small Hive.

On the 13th of July, 1865, I hived a small second swarm in a hive eight inches high, ten inches wide, and sixteen inches long, containing eleven frames six by eight inches in the clear. This little second swarm filled its hive with combs, and stored honey enough to winter on. In the spring of 1866, it was so weak that it could brood only on one comb during the month of April. It however multiplied so rapidly afterward, that it filled two top boxes with honey weighing twenty-four pounds, and had honey enough in the hive to winter on. This spring it came out all right. I made an artificial swarm from it which filled a double hive of the size of the mother hive, and stored about ten pounds of honey in boxes. The mother stock filled its hive, and made about fifteen pounds surplus honey. I have not noticed a drone in this little hive for three seasons.

HOW TO SEPARATE SWARMS THAT MIX DURING SWARMING.

If two or more swarms unite during swarming, I do not attempt to separate them immediately. I hive the whole together in a large eleven frame hive, place them in a cellar for half an hour, light a candle, then take out about half of the frames with the bees on into another empty hive. I then look for the queens, which are usually found in a small cluster of bees, on the bottom of the hive. Lifting this cluster out with a spoon, I part them with some tobacco smoke, catch and cage the queens, suspend one between the frames of each hive, divide the bees equally, and let them stand in the cellar over night. A. GRIMM.

JEFFERSON, WIS., Nov. 6, 1867.

[For the American Bee Journal.]

Common Failures.

MR. EDITOR:—Those Bee Journals came promptly. We owe its correspondents and editor a debt of gratitude for their philanthropic and gentlemanly course in diffusing knowledge upon the interesting and neglected subject of bee-culture.

In canvassing several towns of this State I found, with the exception of one or two in each town, no scientific bee keepers. Many have been induced by local agents to buy comb frame hives and transfer their bees even as late as August. And as several of our last honey seasons, especially 1866, were very unfavorable, most of the transferred stock perished, which was generally attributed to the hives. In answer to inquiries, I have heard the following experience from different individuals, whom, for convenience sake, we will suppose to be one man:

"My father before me always kept bees, and I have kept them ever since; and we know how to keep them by this time, you see. But now the patent hives, cold winters, millers, mould, and robbers, have ruined my bees."

How so?

"At one time we got up to twenty swarms, all in box hives (the best hive in the world.) The next winter the snow drifted over them some, and one-half of them died, with honey enough in the combs, and to spare. Some time in the spring, several more were robbed, honey, bees, and all. Then my bees did not swarm as usual that season, except one that swarmed three times, and went back every time. I thought the millers troubled them, so I lifted them up and put some cobs under, that the worms could not get up; but for all that they destroyed a number of swarms. The next winter I put them in my chamber, and during a pleasant day they some way got the rags and papers out of the holes, and at night they were all over the windows and floors, dying. The remainder did better that year. The next winter I stopped them up with cobs to keep the mice out, giving them air enough as I supposed, and put them into the cellar as neighbor B—— did early. By the last of February, I was working at my potatoes, and something smelt bad, and grew worse every day. Finally, I looked at my bees. I found two colonies were still alive, but the mice had gnawed the cobs out and eaten the heads off of most of the bees. In the other hives the bees were at the bottom, dead, rotten, and mouldy. So you see how difficult it is to keep bees in our days."

Now there is no fiction about this. It is a fair representation of the sentiments of a majority of the beekeepers in the country, very many of whom, though good citizens and intelligent men in other respects, are totally ignorant of first principles, a knowledge of which is indispensable to profitable beekeeping. What we want, then, is to introduce the BEE JOURNAL in every beekeeper's family. This would create an interest in the subject; and then, with the aid of movable frame hives, the business can be reduced to a system and made profitable, instead of depending on *luck*, as many beekeepers imagine.

VERMONT. O. C. W.

[For the American Bee Journal.]

Question.

It has been said that bees will *not* build combs on a *painted* surface. If so, its importance is obvious in many ways. Can any one give his experience in this matter? APIS.

California.

BEES.—From the San Bernardino *Guardian* we learn that parties who go bee and honey hunting have met with a great deal of success this summer, the wild bees being very plentiful in the mountains and canons. Some of the bee trees that have been cut, yielded as high as two hundred and fifty pounds. As a general thing the bee hunters have brought in but few swarms, preferring to take their honey and let the bees remain until their hive is again full. So successful have been the culturists that there has been exported this year a quantity of honey, pure, strained honey—not in the comb, but in cans, amounting to the astonishing figures of twenty thousand pounds!—ten tons of honey, sent by a few persons from this valley this year. With such a result from such a trivial source, what would our valley not produce in the more important branches of husbandry, if proper energy and enterprise were exerted? A few years ago there was not a hive in the valley.

* * *

There is a species of parasitic larvæ called *Volucella bombylans*, which live in the nests of humble-bees, braving the fury of their stings and devouring their young.

[For the American Bee Journal.]

Purity of Italian Bees.

Editor Bee Journal:—A few days ago I received the December number of the Journal, and was much pleased to find that men like Prof. Varro take the trouble of publicly censuring my report about native pure Italian bees, contained in my letter addressed to you from Bellinzona. Now I wish that the Professor, as well as the other kind readers of the Journal, would re-read the article on purity of Italian bees in page 19, Vol. 3, of the Bee Journal, (line six from the top), where he speaks of Italian bees in their *native purity*. If he says, speaking of native pure queens, that they are brown with a black dot or two upon their body; and speaking of an exclusive reliable test of purity in Italian queens, that impeccability of temper in their worker progeny, in addition to their distinctive three yellow bands, by which they are known in Italy and Switzerland, constitutes that test; and that *he has bees that will not sting, even if the frames in their hives are smashed down*, he surely defines pure Italian queens and bees that are more than *native pure*. As he tells such a straightforward story, and his testimony is nowhere impeached, I am forced to believe him, right or wrong. But I am at a loss to know what good result bee-keepers would derive from such a test of purity, so long as no breeder of Italian bees ever claimed that he had any or has advertised any such queens or bees for sale, while the Professor refuses to sell any at any price that might be named. But the Professor changes his ground in his article in the Bee Journal, Vol. 3, page 116, column 2—speaking there of a fragmental dash of impurity in native Italian bees, claiming that some black bees there, as well as here and elsewhere, do make their appearance simultaneously with three-banded, two-banded and one-banded bees, in one and the same hive; and calling in to his assistance the testimony of a gentleman he has been acquainted from his youth. Now I wish the learned Professor would once more read my report, to see whether I had noticed any of these black bees and my opinion about them—beginning at page 95, column 1, line 23 from the bottom. Those bees which a superficial or inexperienced observer would have taken for common black bees, are by no means of the common black breed of bees. On careful examination they show three *brown* bands, instead of the yellow ones of the other bees. Two days after sending off my letter from Bellinzona, I found a colony, one half of whose workers were thus brown banded, but they were not black bees; and I must further add that those bees were not all old ones, as I previously supposed, but young ones just hatched, intermingled with old ones; nor was this surprising to me. I had noticed, during my crossing the Alps, a different breed of sheep from any that I had seen in my neighborhood in America, (I am no sheep breeder), and noticed in some large flocks of white several brown sheep. Shall we, for this reason, conclude that this breed is not pure, since it is not constant in color?

When I went to Italy, I had the impression that I would find there at least a few hives of the common variety of bees, but I did not, though visiting about twenty-five different apiaries. After all, I would not assume the responsibility to say that no black bees, whole colonies or single bees, are to be found in all Italy. But I was satisfied in my mind that Mona's bees answered the definition of pure Italian bees laid down by most of the German and by one English writer on Italian bees. For instance, Rev. Mr. Dzierzon answered my question put to him in a letter, regarding what constitutes the principal points of superiority in Italian bees, thus: "They are more docile and more industrious than the black bees. They defend themselves better against robbers." Rev. Mr. Kleine, on page 199 of this book on bee culture, second edition, 1864, says: "The first three rings of the worker bees are yellow-colored, but black edged. While yet young their color is lighter, but grows darker with advancing age. The drones are darker-ringed than the workers, though not differing in size from German drones. The queens are sometimes lighter, sometimes darker-colored. The lighter golden colored they are, the higher they are esteemed." Dathe in his pamphlet formerly referred to, says: "Of the six abdominal rings of the worker bees, the first two are orange yellow-colored; the third one is, according to greater or less degree of purity, more or less orange-colored or whitish; the next two rings are whitish, the edgings as well as the point of the abdomen are black. The drones partly have very narrow yellow rings, and are not unlike the German drones; partly they have a great deal of yellow." The most differently colored are the queens. The best ones are yellow to the tip of the tail (splendid specimens); others are less yellow, and others still are perfectly dark." Describing the points of superiority, he says: "The Italian differs from the common bee in less irascibility, and though she can sting as well as the German bee, she is far milder, not only when not disturbed, but also during ordinary operations." Mr. Neighbor in his work "The Apiary," London, 1866, in the chapter on Ligurian on Italian bees, page 200, he says: "Their special advantages are greater fecundity of the queens, less irascibility, and a more handsome appearance."

Prof. Varro says as far as impeccability of temper is concerned, in Europe, my test constitutes the rule, and not the exception. Now it will be observed that none of the distinguished writers here quoted, claims that the Italian bees do not sting. They simply claim that Italian bees are more docile than common or German bees. I should be much pleased if Prof. Varro would state how he became aware of this European test of purity. I would also ask those bee keepers who have the first volume of the Bee Journal, to read page 62; and I think it would conduce much towards elucidating this point, if the editor would republish that portion of Kleine's articles on Italian bees.

It further seems to me that Prof. Varro lays undue weight on the fact that queens are bought up in Italy by perambulating agents of foreign exporters, from ignorant peasants for many miles around, to procure the required number. For my part, I cannot see any objection to this, so long as it is not shown that the bees raised by Prof. Mona are superior to those of ignorant peasants, and I must say that I could not see the slightest difference. I will concede, however, that the ignorant class of people may be incapable of raising bees that will not sting. But, so far as my recollection serves, I have not encountered any man who claimed that he had bees that would not sting, except Professor Varro. Nor would such bees suit me if I could get them. How long would it be before mischievous boys would destroy the stocks and steal the honey? In common with the Baron of Berlepsch, I would sooner submit to a dozen stings a day, than be deprived of this formidable weapon of defence.

Every experienced bee keeper knows that bees vary greatly in their behavior at different times. My pure Italian bees, and some of my hybrids, are nearly as gentle as and behave like Prof. Varro's, during the time that white clover is in bloom; but their deportment is very different at various other periods.

As to the charge of Mrs. Tupper that my apiary must be greatly bastardized on account of its rapid increase, will not Dr. S. Sanford, of Lima, Ohio, be kind enough to report what he found in my apiaries when he visited me?

And now, Mr. Editor, if you do not find this epistle too long, please insert it in the JOURNAL, as I have no doubt that many readers take an interest in the discussion. A. GRIMM.

JEFFERSON, WIS., Dec. 11, 1867.

[For the American Bee Journal.]

Profits of Bee-Keeping.

MR. EDITOR:—Seeing a statement by Mr. Baldridge in the JOURNAL for November in regard to the profits of an apiary owned by Mr. Silas Way, has prompted me to give you and the readers of the JOURNAL a statement of the products of one owned by myself and son. We had at the commencement of last winter one hundred and thirty-six stocks, very lightly stored with honey, as the season had been the most unfavorable for honey I have known during the twenty-eight years I have owned bees. Our bees came out in the spring alive, except two stocks, and both of those starved. But one large Italian left about fifteen pounds of honey which they could not get at, because there were no winter passages through the combs. After they were set out in the spring, we lost some stocks by starvation and brood rot, (foul brood) so that when the honey season opened we had about one hundred and fifteen healthy colonies. Three-fourths of these had to be fed previous to that time. We fed them on cheap sugar. Swarming commenced on the 14th of June and ended on the 14th of August; the Italians taking the lead at least two weeks and closing later by three weeks than the natives. A number of our young Italian stocks swarmed in August after filling eight boxes; and the one that came off on the 14th of August gathered honey enough to winter. We now have two hundred and four stocks, besides one that we have sold—making ninety young stocks all in good condition. Many of our natives did not swarm at all, but I believe the Italians all swarmed.

Honey in glass caps sold...............	6,155	pounds
Strained honey sold.....................	350	"
Strained honey on hand...............	250	"
Box honey on hand......................	380	"
Honey sold in family or given away......................................	100	"
	7,225	"

The above statement is not far from correct, I think, as we have kept the account.

Our bees are mostly Italian, and are as pure as can be found anywhere; bred by Mr. W. W. Cary, of Colerain, (Mass)., who possesses superior advantages for rearing pure Italian queens, and is a man perfectly reliable in all respects.

I think we have greatly increased the value of our bees by the introduction of the Italians. It seems to give new life and energy to all their movements, however slight the mixture with the natives.

I have given the amount of honey our bees have stored, and now I will give the product of a single stock of hybrids which I had in a large box hive. It cast a swarm on the 20th of June. This I put into a hive on which I use four glass boxes, and from which we took fourteen full boxes of seven pounds each. The mother stock cast a second swarm from which we took four boxes, making together eighteen boxes or one hundred and twenty-six pounds of honey. I then transferred the old stock, and should think it would weigh an hundred pounds. There being no young brood to hatch, I think the contents, apart from the hive, would weigh seventy-five pounds, which added to the surplus above-mentioned, would make two hundred and one pounds, besides three swarms in good condition to winter.

We had other Italian bees that did equally well. One cast a swarm and filled fourteen boxes, and the cast filled five boxes, besides some only partially filled, and cast a swarm. Another Italian swarm came off on the 2d of July and filled twelve boxes. Our honey was mostly gathered from clover and sold for thirty cents per pound. DOTY BRIMMER.

HOOSICK, N. Y.

A specimen of Trebizond honey, which still retains the deleterious properties ascribed to it in Xenophon's Anabasis, was sent to the London Zoological Society in 1834.

There are always some people who are so forward in their belief that the very fact of seeing a statement in print is authority enough for them. —*Mudie.*

It is in those cases of which we can personally observe or perform only a part, that association and co-operation is of much value.

☞Send us names of bee-keepers with their post office address.

THE AMERICAN BEE JOURNAL.

WASHINGTON, JANUARY, 1868.

☞ THE AMERICAN BEE JOURNAL is now published monthly, in the City of Washington, (D. C.,) at $2 per annum. All communications should be addressed to the Editor, at that place.

☞ We have again on hand a large number of interesting and valuable communications received too late to appear in our present issue. The occurrence of the Christmas holidays made it necessary for us to anticipate the usual time of going to press.

The Erica, or Heath-like Aster.

Dr. J. W. Hunter, of Salem, North Carolina, writes to us as follows, respecting the species of Aster recently mentioned in the BEE JOURNAL by a correspondent, as a valuable bee plant:

"I see in the last number of the JOURNAL that you speak of a plant that has been sent to you from West Virginia, and which you call the *Aster ericoides*. We have the same plant here. It is a great honey-yielding plant; and if it had not been for it this fall the majority of our bees would have died before spring. You seem to doubt its honey yielding qualities, but I can assure you that it is an invaluable plant for bees. I know some stocks that gathered as much as thirty-five pounds of honey from the time the Aster bloomed until frost killed it. It was a pleasure to go out in the fields and along hedgerows and see the bees gather honey."

In the character of a *weed*, this Aster abounds in the fields in the neighborhood of Washington. Pity it does not possess sufficient *exclusiveness* to supplant and eradicate the noxious wild garlic so prevalent in the same quarter.

☞ In response to a correspondent, we would remark that one of the primary objects of the BEE JOURNAL is to enable practical bee-keepers to communicate with each other, easily and freely, on all topics interesting to them, as such. Hives, processes and manipulations are thus expected to be brought under notice and discussion; merits and demerits pointed out; advantages and disadvantages ascertained; the valuable separated from the useless; the new and well-tested brought into favor, and the inefficient or obsolete discarded—in short, the chaff winnowed from the wheat. This, of necessity, involves inquiry, investigation and discussion, which can only be conducted to any valuable purpose when untrammelled. To this end the BEE JOURNAL cheerfully affords room, indulging its correspondents with the largest liberty compatible with propriety; for it is a settled maxim with us that whatever will not bear discussion has no right to challenge acceptance. We much desire, however, that correspondents should treat each other courteously on all occasions.

It is, moreover, very desirable that investigation and discussion should be the work of disinterested parties—of persons sincerely anxious to aid in evolving the truth and advancing bee-culture, whether as a business pursuit, a scientific study, or an amateur hobby. We shall ever be pleased to receive and publish the observations, remarks, and comments of practical men; but would respectfully decline the favors of those who write merely to "praise up" some favorite fancy or contrivance, or to "run down" others. If from actual experience or well devised and carefully prosecuted experiment, disadvantages of any kind, in any case, have become manifest, point them out plainly that others may be benefited—regardless whether or how it affects the interests of originators or patentees. So likewise let that process receive your approval or praise which has stood the test of scrutiny, having been found valuable on actual trial. In every case, however, be sure to give us *the facts*, plainly stated, so that whatever may be thought of the accompanying comments or theories, there shall ever be something valuable added to our stock of knowledge.

In conducting this journal we have no partialities to indulge. Entertaining very decided—perhaps peculiar—notions on some points, we are not prone to obtrude them on our readers; and are quite willing that those who differ from us should enjoy their own opinions, and express them, too, when they please, in our columns.

This may seem to have a tendency to keep disputed questions unsettled. But till they are satisfactorily solved, it is better thus than that they should be summarily disposed of by the arbitrary dictum of any one. The muddiest stream will, in time, work itself clear, if allowed free course.

EDITOR BEE JOURNAL: I would wish you to tell your printer not to change again my phraseology so as to make me say just the reverse of what I wrote.

On page 116 (B. J.) where writing about what Mr. Harbison believes, after the phrase *a seminal sac*, eleventh line from top, the following sentence is left out altogether—"*that she* *has no control over this seminal sac,* although," &c., &c. And then, instead of beginning the next sentence by saying: And yet Mr. H. *does believe*, the negative "not" is interpolated between *does* and *believe.* Let him correct his misstatement in the next number; and please do tell him that,

"When I am writing of *freshly blown roses*,
He never may make it of *freshly blown noses.*"

Minor mistakes are of no consequence.

Very truly yours, F. VARRO.

[For the American Bee Journal.]

On Wintering Bees in the Open Air.

MR. EDITOR:—Intelligent apiarians are aware that most bee-keepers in cold climates, who winter their bees in the open air, are not satisfied with their success in any style of hive yet devised. While the hives are kept tightly closed at the top, moisture condenses or freezes upon their interior surfaces, and often upon the combs themselves. In this way many colonies contract disease, or perish entirely. (See p. 340 of my work on the Hive and Honey Bee.) If the honey-boards of movable comb hives are removed and the tops of the frames covered with corn cobs, straw mats, old woolen garments, or any non-conducting, or (in common phrase) "warm" materials, it is easy to keep the bees dry without too much escape of heat.

There is, however, one source of trouble which seems to have escaped the notice of most observers. While the weather is moderately warm, the bees do not get into a very compact mass, but as soon as frosty nights come, they instinctively contract their cluster, so as to assume as compact a form as possible; even crowding into all the empty cells within the cluster. Now it would seem easy to provide in movable comb hives, all the conditions which are essential to their successful wintering, if the colonies have sufficient bees and honey. A proper number of the central combs, which have the least honey and are most suitable for early breeding, should remain in place as best adapted to the winter quarters of the bees. If necessary, some of the fuller combs should be brought nearer to the center, so that in long continued cold, the colony may not perish for want of provisions easily accessible. When no winter passages are made through the combs, the bees in the outside combs when they feel chilly, retreat from the colder surfaces of the comb to the center, and if there are not enough of them to keep up the proper temperature, they soon die. Should the weather become sufficiently warm, the bees will remove them from the hive, and on the return of another "cold snap," the same process will be repeated until by frequent losses, the hive often becomes too much depopulated to survive the winter, or too weak on the opening of spring.

The making of winter passages will not always prevent these disasters. It is true that the bees becoming sensible of the increasing cold contract their cluster, and that driven away from the outer surfaces of the combs, they contract centrally; and it would seem almost certain that those in the outer combs, when they find themselves unable to keep warm, would, in contracting strike the winter passage, so as to get one comb nearer to the center; and if too cold there, would pass still one comb nearer to the center of the hive. The colony by contracting or expanding centrally, according to the state of the weather, would thus be always in the best condition for wintering comfortably. This theory is admirable enough, but unfortunately in practice, it often fails.

The sudden change from moderate to very cold weather, seems to deprive the bees of the admirable wisdom they so often exhibit in adapting themselves to other emergencies. They are often as foolish as human beings, who, when almost frozen, insist upon lying down to take their ease. They contract centrally to be sure; but the two outside clusters often fail to strike the winter passage, and huddling together miserably perish.

Making the walls of the hive double, or lining them with warm materials, will not prevent such disasters; but will often aggravate them by tempting the chilly bees to hug up against these comfortable substances until they are too far gone to join the central cluster, even if they knew how to reach it.

How can we best prevent such losses? I submit the question to your readers, and may, in your next number, give the results of considerable experimenting upon this important subject.

L. L. LANGSTROTH.

OXFORD, BUTLER CO., O., December, 1867.

[For the American Bee Journal.]

Chickory as a Bee Plant.

As there have been several plants recommended in the BEE JOURNAL, as furnishing pasturage for bees, I would name another—"*Chickory*" It is biennial or perhaps perennial, as pieces of the root will grow. The prepared root is used, especially by the Germans, as a substitute for coffee. It flowers from early in July till frost, yielding both honey and pollen. There are not many flowers on which I have seen bees work so industriously, except the raspberry. I would recommend it to Mr. Salisbury, and others, who wish to grow plants for bee feed. The seed can be obtained of R. K. Bliss & Son, 41 Park Row, and 151 Nassau street, New York, at twenty cents per package, and doubtless from other seedsmen also.

CANFIELD, OHIO. J. WINFIELD.

[For the American Bee Journal.]

Novice wants to know how to get "Giantess" down safely from that big tree?

Very easily. Place at the root of the tree an empty hive, containing a small quantity of ———'s "Bee Charm."

EXCELSIOR.

P. S.—Use double the above quantity of the infallible "Bee Charm" if you wish to have the bees carry down the combs and honey, and deposit them nicely in the hive.

[For the American Bee Journal.]

Uniting Bees in Box or Movable Comb Hives.

I noticed an inquiry in the BEE JOURNAL, volume third, page 57, as to the best method of uniting bees. My mode of procedure is thus: If the bees are in box hives, drive out the bees you wish to unite, in an empty box. First, invert the hive containing the bees, and set the empty box on top. Then take two small sticks or use the palms of your hands, (see *Langstroth on the Hive and Honey Bee, 3d edition, page* 155,) rap the sides of the hive smartly from ten to fifteen minutes, and the bees with their queen will be found clustered at the top of the box. Now blow some smoke into the hive with which you wish to unite them, to drive the bees up among the combs. Close the entrance, and drum the hive, as in the former case, from three to five minutes, till a loud humming is heard within. Then carefully turn the hive bottom side up; take the box containing the expelled bees, and shake them into the inverted hive; set the latter right side up, and the work is done. It may be well to look at them ten or twenty minutes afterwards; and if found fighting, blow smoke into the hive for a minute or two, which will give them all one scent, and they will mingle without further trouble. But when the work is properly performed, this latter operation is seldom required.

Where movable comb hives are used, the operation is quickly performed. First blow smoke into each hive. Close the entrance, and drum them as above directed until the bees have filled themselves with honey, which will be in four or five minutes. Remove the honey-board from each hive, lift out the combs from the hive you wish to unite, and shake the bees off on the top of the frames of the other hive; close the hive, and your work is done.

HENRY S. LEE.

EVANSBURG, PA.

[For the American Bee Journal.]

Raising Queens.

I cannot make my bees raise queens from worker eggs, with any degree of certainty. Does it make any difference whether the eggs are in new or old comb?

Last spring I forced a swarm from a frame hive, giving the swarm two sheets of brood comb, and set the old hive on the stand of a strong stock, which I removed. They did not build any queen cells, though I gave them a sheet of comb containing eggs, at four different times without success. At last I gave them a sealed queen cell on *Friday*, and on *Monday* following—in three days—the queen had laid a circle of some four or five inches of worker eggs. It is now the best stock I have; but it gave me no surplus honey.

The forced swarm swarmed twice.

What was the cause of the failures?

C. T. ADAMS.

WEST MEDWAY, MASS.

[For the American Bee Journal.]

Italian Bees and Red Clover.

In reply to the question—"Has any one not raising queens for sale ever had Italian bees to work freely on red clover?"—proposed by Mr. McCune in the BEE JOURNAL, vol. 3, page 58, Mr. Long says, on page 75, "I propose to answer this question to his entire satisfaction. Mr. Langstroth requested Mr. R., myself, and several others, to step into his clover patch, which was close at hand, and satisfy ourselves on the subject. We did so, and found the Italians working upon the bloom, without seeing a single black bee."

Mr. L may have answered Mr. McCune's question, but the answer is not entirely satisfactory to me. Are there any black bees in Mr. Langstroth's neighborhood? Mr. L. is engaged in the sale of queens. If he rears his own queens, supplying his customers with a pure article, he must of necessity have first Italianized all the bees in his immediate vicinity; in which case there would have been no black bees to work on red clover. The Italians will probably sometimes work on red clover, and so will the natives; but will they work on the red clover when the natives will not? Will they collect and store any more honey in a season, than the natives, in consequence of their superior ability to collect it from red clover? To many of the readers of the JOURNAL this question may seem of little consequence; but to beekeepers residing in localities where the main dependence for bee pasturage is white clover, with but little of that, and where they are surrounded by large fields of red clover, it is of considerable importance; and some of them at least, before purchasing the long-billed variety, wish to *know* the *facts*. If the statements made by most of those who are engaged in the sale of queens were accepted as evidence upon this point, the proof would be conclusive. Mr. Quinby, in "Beekeeping Explained," new pages 311 and 312, says: "I had two colonies nearly all changed, several hybrids, and a number in which I had just introduced the queens. I had about sixty native colonies, and all Italians marked with the yellow stripe, which would have made about three good swarms, in one apiary. White clover was blossoming in abundance and the early red or pure clover in small quantities. Here was a chance to see if they frequented the red clover more than the natives. I found nine Italians to two natives on this plant. The two exceptions might have been black hybrids." In a note, at the bottom of page 312, he further says: "This was important to me. If the honey from white clover could sustain sixty or eighty colonies, *that from the red would sustain nearly as many more, and I could keep* double the number each year." In his circular for 1867, he also says: "*I have no opportunity to see them work on red clover, as little is raised in this vicinity.*" What is the trouble here? Has Mr. Quinby or his neighbors suddenly ceased raising red clover? Or has he discovered that, as bee pasturage, it is of no practical value to the

Italian bees? If so, "why not be frank about it, and say so?"

Mr. Langstroth says they work freely on red clover. Other dealers repeat the assertion; but most of them reside in localities where there is no red clover raised, and obtain their information from parties residing at a distance. Mr. Quinby, in his circular, further says: "The testimony that they do so is very strong. Mr. Stevenson, of Albany county, N. Y., assures me that a colony of his—the only one he had in 1864—filled the surplus honey boxes with a good quality of *clover* honey in August, while his black bees in the same yard collected only from *buckwheat.*"

If disinterested Italian beekeeping readers of the Bee Journal will please give, through its pages, the result of their observations and experience on this point, either for or against, they will oblige A Beekeeper.

P. S. When the above is answered, I may propose a few more questions relating to Italian bees, on points where superiority is claimed and the claim disputed—such as their being less disposed to rob; also their very amiable, kind, quiet, peaceable, mild, tractable, docile, compliant, human breath-loving disposition, &c.

A. B. K. or Victim.

[For the American Bee Journal.]

The Italian Bee Question.

Mr. Editor:—That "a little learning is a dangerous thing," was never better exemplified than on the subject of bees. A man with a dozen hives, and a few months' experience, assumes to understand everything that can happen, or ever will happen; knows the effect of a wet season, a dry one, a cold season, a warm one, a plenteous yield of honey, a season of scarcity; can tell what effect these conditions will have on wintering bees, the moth worm, foul brood, and other things, and thinks himself master of apiarian science; and the less he really knows, the more he presumes. And when he has read the production of some one equally ignorant with himself, he is not content till he has thrust the obnoxious quackery into the faces of all. The result is, there can be no science whatever established. What one attempts to build up, another is interested to pull down. No one has yet a reputation for accuracy in all things, that will warrant us in repeating his experiments without watching the result. Every one that *knows* anything on this subject, *must* experiment for himself. But I protest against any further teaching of this sort. No fact should be admitted as established for one moment, without a long series of experimental observations by men of ability who *can see things as they are*, without prejudice, report without misrepresentation, and can deal *justly* with his fellow man without the compulsion of the law.

Ever since the first introduction of the Italians, there has been a raging controversy as to purity. Nothing too absurd to offer as a test, every one of which, when unsupported by some other test, can be shown to possess no reliance whatever. If the teaching of the ignorant, dishonest and inexperienced were excluded, we might have more profitable matter. I say the ignorant, because he talks of that of which he knows nothing; the dishonest, because he slanders and misrepresents for his own or friend's benefit; the inexperienced, because he is too hasty in his conclusions to be reliable,—as has appeared in the Journal for the last six months.

Does not Professor Varro destroy much confidence, in any science he may presume to teach, by his misrepresentation in the Bee Journal? It gives the whole breadth and depth of his observation, and betrays the shallow foundation upon which *his* science in this matter is based. He has procured queens "from two different sources" and raised "sixteen flying ones," and sets himself up as *judge* of purity; while another, who has procured queens from near a dozen sources, and has raised thousands, he does not allow to be reliable. Also, he sets up a standard varying materially from Mr. Langstroth.

On page 19—Bee Journal—he makes a garbled extract from my circular, endeavoring to show that I have no Italian bees with more than one yellow band. What was his motive? If it was *fair* and *honest*, why did he not give the whole of what I did say—at least this much: "We have no test of purity that is wholly satisfactory," and I do not remember of ever *presuming to give one.* On the contrary, I gave what I believe all would agree to be a test of *impurity.*

Prof. V. says: "To my certain knowledge the best apiarians always speak of *three yellow rings*, and so does Mr. Langstroth." As Mr. Langstroth is added as if not included in the "best apiarians," I am interested to know who they are. When a man talks about *certain knowledge*, we have a *right* to suppose it means something more than bombastic pretension. When he has informed us *who* the *best* are, I hope he will inform us *what constitutes best* apiarians? Whether aptitude for jumping at conclusions, without a single reason beyond the say-so of some one else equally ignorant? Whether morality is embraced in the word *best*—ability to report truthfully—no pretension of *knowledge* when only guessed at? Whether ability to observe correctly, waiting patiently the developments of nature before deciding? Whether the ability to manage successfully, for the third of a century, the largest apiaries in the whole country, is included?

Mr. Worthington, page 48, having a copy to improve upon, has exceeded the Professor just a little. In speaking of that article, he says: "It is certainly the fairest and most satisfactory which has been given by any American beekeeper in your paper. There must be a great deal of harm done the bee interest of the country by the immense number of impure queens sent out yearly by men who ought to know better than to go into the business before they had made themselves perfectly familiar with the markings of the Italian bee as settled by the best European apiarians." "It is surprising to see how boldly the gentleman who considers one band all-sufficient, sets forth in his circular, as tests of purity, the very marks and temper, which any one who has read volume first of the

Bee Journal, or Mr. Langstroth's writings on the subject, knows are certain indications of mixed blood."

Relative to the *markings* as settled by the best European apiarians, I would ask *who* they are, and *when* it was *settled? Where* it was, and just how, and what it was? About going into business before becoming acquainted with all these things, it *may* be attributed to the same cause that makes D. M. Worthington assume to be umpire in this matter, evidently with borrowed experience, as is indicated by his reference to the Bee Journal and Mr. Langstroth. I think I have seen a description of pure bees from Mr. Langstroth, a little at variance with Prof. V.

How to *know* "certain indications of mixed blood" by reading the Bee Journal or Mr. Langstroth, is not quite clear to me. By what authority are they constituted judges? Where did they become so? I do not wish to deny them any qualification which their long experience has given; but, before I am willing to take any opinion of their's as *law*, as *knowledge*, I must understand very many points on which it is based.

We talk about the purity of breeds of horses, of cattle, dogs, fowls, and bees. How many of these pretenders can give a rational idea of what it is? How many have ever thought of the *origin* of breeds of any kind? We are told that there is a district in Italy surrounded by impassable barriers—to bees—in which this variety is found. I would enquire, how they originated? Were they created at the beginning of all things? Or grown out of the black bee by peculiar surrounding influences continued for centuries; or the result of a cross of two or more varieties—perhaps the Egyptian and black? Whatever the origin, we have proved a modification in color of queens, if not bees, in the first generation. Cross the Italians with our black bees, and we have a mixture—half the progeny black; the other, beautiful Italians. What would be more absurd than to judge of their purity by color? Take all the black ones from a colony of hybrids, and exhibit only the bright ones, and what shall prevent these color judges from being deceived? Cattle are called pure when you go back but few generations without a cross. Can any breed be *pure* but by in-and-in breeding, from the last cross? Could we take the hybrid progeny of our bees, and breed from the same strain—selecting the two opposite colors—for a few thousand generations without a mixture, would we not have a new breed distinct and fully established, and would not every branch be equally pure, though variable in color, whether brown, yellow, or even black? And under similar influences each mother might transmit an exact copy of herself for many generations. Now if there is a place where our Italian bees have been perpetuated for a period further back than history reaches, is it not certain that whoever obtains stock from that district, or direct descendants from them, will have the utmost purity, let the color be what it may? By all this, I am not endeavoring to show that *one band* on the workers is a test *all-sufficient*, but on the contrary that *no one test is sufficient—not even three distinct rings*, I claim to have as pure, as high colored, bees as were ever imported, and when I describe them, endeavor to do it as it is. When I use the word distinct, I *mean distinct*. I have some bees—that are probably a cross of two importations—that when they first fly, show not only three yellow rings, but a series of rings, the whole length of the abdomen, of a color not distinctly yellow, but sufficiently near for *some persons*, who use glasses a little *green*, to describe as *all* yellow. I have others that on all ordinary occasions, show three distinct rings, but some of them, when they *first leave the cell*, when they have been stung, or the abdomen is contracted by cold, or when very old, the three rings are so nearly blended, that I cannot call each distinct in sight, although I know they are really separate. It seems to be forgotten, that to show three yellow rings distinctly, they must alternate these with, and show rings of another color, just as distinctly.

Relative to disposition, I think I should find more to agree with me when they come to have the same experience. I transfer a great many from wood to straw hives—both black and Italian—in the fall, and back again in the spring. I also ship a great many by railroad, that require extra packing, and handling of combs to secure safety, at the most irritable season. The very bees that I find quiet in the working season, are often cross now—it is the rule instead of the exception. Were my experience limited to fifteen or twenty hives in the working season only, it might be differently reported.

Did it ever occur to Prof. V. and Mr. W. that when they show clearly, that I have no pure Italians, that they make Mr. Langstroth as well as many others, rascals! I have bought queens of Mr. L. several different times, *tested queens*, paid him his full price. I received them, and to prevent any mistake afterwards, clipped one wing. He was not to send them to be tested by me—to *see* what they they were—but such as he already knew to be pure. He visited me, saw the progeny, at least of one, and pronounced it *beautiful*. I have described candidly, and now am I to be persuaded by such men, that Mr. L. is not to be depended upon—sending out spurious articles for genuine. It is too much like swindling, for me to believe.

I would say, in conclusion, that if Prof. V. would carefully read over a portion of the article on page 19, and imagine that I had written it, as applied to himself, he would have in substance what I would say here, should I prolong this further. M. Quinby.

St. Johnsville, N. Y.

[For the American Bee Journal.]

Bees and Beekeeping in Virginia.

Mr. Editor:—Enclosed you will find two dollars for the "American Bee Journal," with which I am much pleased; and it would have afforded me additional pleasure if I could, with this communication, forward you a long or even a short list of subscribers for the Journal, as every owner of bees should subscribe for and read it.

Beekeeping, however, is at a very low ebb in this section of Virginia. But few persons use anything better than the old box hive, without even boxes for surplus honey. They *brimstone* their surplus stocks in the fall, and get out a mixture of honey, bee bread, and young bees, not suitable to send to market or pleasant to use at home. I am the only person, to my knowledge, in this section, who is using the movable frames; and as to the Italian bees, I suppose not one beekeeper in twenty, in this part of the State, ever heard of them until I introduced them into my apiary last August. Here permit me to say that I purchased my three (3) queens from Mr. W. W. Cary, of Colerain, Mass., being advised to do so by Dr. E. Parmly, of New York—to whom my thanks are due for the advice, and for the information given me by letter, as I am much pleased with my purchase. Mr. Cary's prices are very low, as compared with those of other breeders, being ten dollars for three queens, shipped in the best manner possible—very few of the workers sent with them being dead on their arrival.

Mr. Cary, I think, must have the *genuine article*, from the markings of the queens and of the workers accompanying them, and the workers reared in the hives to which the queens were introduced—all having the three yellow bands. *A fourth ring I should consider superfluous.*

Mr. E. Gallup, in his communication to the *Iowa Homestead*, which you published in the last number of the JOURNAL, gives the true theory in regard to luck in beekeeping and lucky swarms, namely—straight combs, and all or nearly all of them brood combs. I transferred such a lucky swarm to a movable frame hive this summer, and found nearly all the combs straight, and not more than six inches square of drone comb, and that in one corner where it had evidently not often been used for breeding purposes. This swarm was originally in a hive or palace, as it was called, being built with an outside casing enclosing three drawers; one below, two feet long by fourteen inches wide and twelve inches deep, as a *home;* and two above, each one foot square and fourteen inches wide, for surplus honey. It was put in this hive in May, 1847, and never failed to make from fifty to sixty pounds of surplus honey each season, and two years made 120 pounds each. This hive seldom swarmed; but when it did, the swarms were fine and large. When transferred, I could see no difference in the size of the bees as compared with other and younger stocks, although they had been reared in combs twenty years old; and in some of the cells I could separate and count the different layers of cocoons spun by the larvæ, to the number of fifteen or twenty. So much for the hobby of some venders of patent hives, for removing the combs every year, to prevent the raising of dwarfs. This hive had an entrance twenty-four inches long, which was always left open; but the colony being a strong one, defied the moth miller and all other enemies. My brother has a colony which has been in the same hive (a very large one) for thirty years, from which he gets annually from forty to fifty pounds of surplus honey.

This has been an unfavorable fall for bees in this section. Late swarms will hardly get through the winter if left upon their stands, which is the mode practiced here. No one, to my knowledge, has tried burying, or wintering in cellars. I have, after doubling my weak stocks and supplying them with honey, and some with molasses poured into their combs, removed them to my cellar. (By the way, does any of the readers of the JOURNAL know whether bees would winter entirely on molasses? A neighbor saved a colony last spring, by feeding molasses poured over crumbs of corn-bread, and set on the bottom of a common box hive.) I wish to know what the temperature of the cellar should be, and whether I have given them ventilation enough. I have removed the honey boards and the top that covers the boxes, and put on instead a cover with only two 1¼-inch holes through it, and covered them with wire cloth, and also the entrance which is six inches long by half an inch wide. How am I to know when they have ventilation enough? The temperature of the cellar ranges from 34° to 40°. Will the bees require water during the winter, when thus housed up? An answer through the February number of the JOURNAL, or by letter, from some practical beekeeper, will be thankfully received and duly appreciated, as my valuable Italians are also in the cellar.

Will Mr. Bickford, of Seneca Falls, N. Y., let us hear from him, through the JOURNAL, as to how he is getting along with his machine for manufacturing perfect honeycomb? We shall all want the combs next season, if not the machine to make them. I have just received, from Mr. W. Dikeman, a sample of starting comb, as he terms it, being a thin sheet of wax with the shape and size of worker cells impressed on each side. I think it will be of considerable service, to attach to the frames and top of boxes, to secure straight combs; but nothing to compare with Mr. Bickford's combs, which he proposes to turn out with full depth of cells and perfect in shape. J. R. GARDNER.

CHRISTIANSBURG, VA.

Some of the bee-raisers in California have hit upon a novel expedient to increase the product of their hives. They place the hives on a broad-bedded wagon with springs, and allow the bees to range at will on the low lands along the bay of Suisun, San Puebla or San Francisco, during the latter part of the rainy season, when the weather is pleasant, and during the early spring. As the season advances, and the flowers become more abundant on the uplands, they drive higher and higher up the mountains, the bees always returning at night to the spot where they left the hives in the morning. In time, the valleys and foot-hills become parched and bare, but the mountain heights still retain their verdant covering, and the bee proprietor ascends until the jumping-off place is reached, or the clouds in the heavens warn him of the approach of the rainy season, when he commences to descend. This system enables him to take thrice the usual amount of honey from the bees every season. It is the favorite one in Contra Costa County, around Mount Diablo.

☞Send us names of bee-keepers with their post office address.

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[From the Bienenzeitung.]

Foulbrood.

In anticipation of a second edition of his book on "Bees and Bee Culture," the Baron of Berlepsch has published the following article on Foulbrood, with the request that those who have been troubled with this disease in their own apiaries, would communicate to him the result of their observations. It is certainly desirable, that, for the elucidation of a topic of such importance as this mysterious malady—of the cause, source, or cure of which we almost literally know nothing—those under whose observation it has come should contribute any facts, hints, or suggestions which may have occurred to them.

Foulbrood is the dying, putrefying and final drying up in the cells of the uncapped brood, but more generally of the already capped brood. This brood disease varies considerably in its manifestations, but usually assumes a contagious or a non-contagious form.

§ 1.

1. Non-Contagious Foulbrood.

This may proceed from various causes. Thus some of the brood perishes when from driving out a swarm or by transposition of its hive, a colony has been so weakened that all the brood can no longer be properly nourished or covered. It may also occur in the spring if, after eggs laid by the queen in the lower parts of the combs have been hatched, a sudden change of weather constrains the bees to withdraw, and the larvæ there become chilled. Destruction of brood from this cause was observed as early as in the days of Columella.

The food on which the larvæ are fed may likewise at times, be of a deleterious quality and cause death. Thus Spitzner relates: "In the spring of 1781, I had placed thirty colonies in a forest where whortleberry bushes were in profuse bloom. When these colonies were brought home, I observed that about six inches of the lower portions of the combs were perfectly black and all the larvæ in the cells dead. The bees, however, speedily removed the perished larvæ, and eight days afterwards I found the black cells replenished with brood which regularly matured."

Hoffman-Brand says: "In the year 1851, the fir trees here were greatly devastated by a species of caterpillar in vast numbers. After these had died, forester Wunsche, at Tiefenfurth, observed that those fir trees were frequented by the bees, and soon after foulbrood made its appearance in his hives. The cells of one comb containing foulbrood were altogether black. Similar facts were communicated to me by Mr. Sommer, of Neuhammer. But in either case no further evils ensued."

Sometimes the bees will remove the deceased brood from the cells before it becomes putrid; on other occasions they let it remain till it is perfectly dried up.

This non-contagious foulbrood is usually of no consequence, being restricted to the brood it originally affects. Whether under peculiar circumstances it may not sometimes assume the contagious character, or whether contagious foulbrood may not occasionally be developed from it, will be considered in another section.

§ 2.

2. Contagious Foulbrood.

In some districts of country this form of foulbrood does not appear ever to occur. Spitzner in Upper Lusatia, Busch of Arnstadt, Kaden at Mayence, and Kleine in Hanover, state that they have never seen this disease in their apiaries, or in their respective neighborhoods. In Thuringia it was entirely unknown till 1858, and my old instructor in bee culture, Jacob Shulze, had not met with it in his own colonies or in any other, during an extensive practice of more than fifty years.

This, the most dangerous of all the diseases to which bees are subject, presents itself in various aspects, being sometimes more and sometimes less destructive, at times running its course rapidly, at others lingering through a protracted term. At times it is of so manageable a character, as to be easily removed; and not unfrequently it spontaneously disappears. It is impossible to specify these various grades minutely, though three of them may readily be distinguished.

a. First Grade.

At the commencement of the disease we find in one or more combs from ten to twenty sealed cells, more or less, with collapsed covers or caps. If closely examined these caps will be found perforated with a small round hole. When the cap is removed we find the full-grown larva stretched out at length, with its head towards the septum of the comb, and its body discolored of a brownish hue. The larva usually dies before the head enlarges, evidently soon after the cell is capped and before assuming the *pupa* state. Uncapped putrid larvæ are seldom seen, and putrid *pupæ* (form approximating the winged state of the insect) still more seldom. When crushed we find the contents to consist of a tough slimy mass. Soon the specific form of the larva becomes no longer recognizable, decomposing into a clammy glutinous matter, drying up in the course of ten or twelve days into a dark brown nearly black crust or scale on the lower side of the cell. This scale the bees are unable to remove, but while still sufficiently numerous to work with some spirit, they will demolish the entire cell and rebuild it with new material. But after the disease has made much progress they will omit all efforts to remove the offensive matter and cease building altogether, as they are not prone to build comb, except while strong and pasturage abounds. When the disease has become very virulent and predominant, they cease flying almost entirely and content themselves with efforts to expel the vitiated air from the hive. They are apt also to swarm out and desert their hive in spring or fall, if a fine tempting day occur.

If small brownish or black scales or granules be found on the bottom board, which produce a slimy fetid mass when rubbed between the fingers, the existence of foulbrood in the hive may be regarded as certain. When once started, it usually spreads rapidly, and frequently from one-half to three-fourths of the brood is affected and perishes. At this stage of the disease, its existence is proclaimed by the offensive smell, resembling that of putrid meat, diffused from the entrance of the hive, instead of the agreeable odor usually perceptible there—the bees fanning the while with unwonted vigor.

It is a singular fact that all the brood does not perish. Even in hives in which foulbrood exists in its most malignant and noisome state, a portion of the brood, however small, will always be found in a healthy state and attaining a perfect development. This, considering the great contagiousness of the disease, is in truth a great mystery. It will, however, not long be confined to the hive in which it originated, but gradually spread to other hives, so that in the course of a year or two, all the stocks in the same apiary or neighborhood, will be, more or less, infected. Colonies infected with this kind of foulbrood in its malignant form, never survive long. The malady progresses rapidly, and not only does the brood first affected die, but the very brood cells are converted into nurseries of disease, so that in a short time the queen can find none into which to lay eggs. Thus the colony becomes rapidly depopulated and commonly perishes in the first year, or certainly in the second.

b. Second Grade.

This grade differs from the first only in this, that, *first*, the malady does not spread so rapidly; *secondly*, that it rarely becomes so intense; and *thirdly*, that it usually disappears spontaneously. I have frequently had opportunities to observe this myself. Thus, for instance, in the spring of 1859, many stocks belonging to Mr. Umbreit, of Wolfis, in the Duchy of Gotha, were strongly infected with foulbrood. Yet in 1862, the disease had entirely disappeared again, though no means had been used for its removal or cure. Mr. Klein, of Tambuchshof, has experienced a similar case, as reported in the *Bienenzeitung* for 1864. The disease when occurring in this grade, is always curable if treated with ordinary care and attention; and is, in many cases, even easily removed, as I had repeatedly occasion to observe. In 1860, one colony in Mr. Kalb's apiary at Gotha, was infected, and in the summer of 1865, three more became diseased, and in each of these four cases, a cure was effected by simply removing the combs containing the diseased brood. Probably the disease would have disappeared spontaneously. But such expectation should not induce the bee-keeper to be careless or inattentive, for not seldom, instead of disappearing, this grade of the disease will (generally in the second year) run into confirmed malignant and contagious foulbrood, such as might appropriately be termed *brood pestilence*, which is utterly incurable as far as we now know.

c. Third Grade.

Dzierzon says: "Where this form of foulbrood exists the greater portion of the uncapped larvæ perishes. That portion which is sufficiently advanced to be capped or sealed over, usually remains healthy and becomes perfectly developed. A capped and yet putrid brood cell is here a rarity. The matter into which the dead larva decomposes is more paste-like and less tough, than that resulting from the malignant form. It dries up in a scale at the base of the cell, which is easily detached, and so long as the colony is still strong, it will be removed in the shape of dark-brown scales, dropped on the bottom board and afterwards carried out of the hive. When such dark-brown scales are found on the bottom board they may be regarded as proof positive that foulbrood, even though it be yet in its milder form, exists in the hive. Colonies thus infected, not unfrequently sustain themselves during two seasons, because only a portion of the brood dies, and that being in open cells is easily removed by the workers. The cells are then again supplied with eggs by the queen, a portion of the larvæ from which will remain healthy and mature perfectly, thus keeping up the strength of the colony tolerably well for a protracted term. At times, too, the disease will disappear again. Colonies which in the summer diffused a strong putrid smell, have been found entirely pure and healthy in autumn."—*Rational Bee Culture*, 1861, page 271.

I have had no opportunity to see *this form* of foulbrood.

§ 3.

Manner of Infection.

The disease may be communicated—

First, by feeding bees with honey taken from foulbroody hives.

Secondly, by inserting combs taken from such hives, especially those containing honey and pollen.

Thirdly, probably also by the miasma of the surrounding atmosphere.

Fourthly, by bees from healthy stocks robbing or attempting to rob the foulbroody hive of its stores. This is particularly apt to be the case if the robbing bees have brood to nurse at home.

Fifthly, by the bee keeper himself if after opening and examining a diseased stock, he proceeds to open and operate on a healthy one without previously washing his hands.

Sixthly, by uniting the bees of a diseased stock with those of a healthy one, when there is young brood in the hive of the latter, though the union can be safely effected where there is no brood. Even honey from foulbroody stocks fed to colonies which have no brood seldom does harm, though it would otherwise certainly introduce the disease. It is usually thought that a queen from a foulbroody stock, introduced alone in a healthy colony, will not communicate the disease. Spitzner, however, says that he infected a healthy colony by introducing in it such a queen. The same occurred to Dr. Asmusz in two cases; to Mr. Arnold in one; and in my own apiary in 1867, a colony certainly healthy at the time, became diseased shortly after I introduced in it an unattended queen taken from a foulbroody stock. There does not seem to be any good reason conceivable why a queen should not thus communicate the disease, when it is well ascertained that it is frequently so communicated by workers.

Seventhly, by hiving a swarm in or transferring a colony to a hive previously occupied by foulbroody stock. Scalding, scouring, and other modes of purification, do not always effectually disinfect such a hive, in which the disease may break out again even after the lapse of years.

Eighthly, by locating a colony on the place or stand which was before occupied by a diseased stock. Instances are known where foulbrood occurred under such circumstances, though the stand had been left unoccupied more than a year.

Finally, Dzierzon informed me verbally that the disease may be communicated and disseminated even by the flowers and blossoms frequented by the bees from foulbroody stocks, as those from healthy colonies, visiting the same flowers, may carry the infection home. He stated that he knew of instances where foulbrood was communicated to distant apiaries without a transfer thither of bees or colonies. Weltzer says he has made similar observations. So likewise Hoffman-Brand. Very probable, for at the Apiarian Convention at Dresden, a member of a bee keepers' club related one evening that some thirty years ago foulbrood became so thoroughly and rapidly distributed from place to place throughout Saxony, that in a few years nine-tenths of the colonies there were totally destroyed, and bee culture ruined for a time.

§ 4.

Means of Prevention.

First. Be cautious in purchasing honey for feeding, and use none for that purpose unless you are certain that it was procured from healthy colonies. Never feed your bees with West India or Cuba honey, as it is a well ascertained fact that foulbrood has been caused by the use of such honey.

Secondly. Be equally cautious in purchasing bees. Introduce none in your apiary that are not free from this disease. The existence of foulbrood in a colony can easily be ascertained by the fetid odor diffused in the hive.

This is about all that the bee keeper can do in the way of prevention. He cannot prevent his bees from carrying in impure or infectious honey, for they will gather it from any source to which they have access. Mr. Stoehr's bees resorted to a neighboring confectionery for honey which was exposed there in an open cask. Shortly thereafter foulbrood made its appearance in his apiary, and finally ruined all his colonies.

§ 5.

Treatment of Foulbroody Stocks.

1. As at present we do not yet know how foulbrood *originates*—that is, we are ignorant of the cause or causes which produce it, but merely know the fact that it kills the larvæ, we can only hope to arrest and cure it by removing the queen and *preventing the production of brood*—thus literally starving out the disease by withholding the stuff it feeds on. One who knows something of the nature of the malady, can only smile when he finds various prescriptions and medicaments to be administered to the bees, recommended as infallible cures. Healthy bees introduced into an infected hive soon become diseased; and can we expect that bees already suffering from foulbrood can be restored to health while remaining in a hive imbued with the virus and immersed in an atmosphere surcharged with the infectious miasma, by administering a few drugs? If such remedies ever seemed to be of service, it must have been in cases where the disease would have spontaneously disappeared, thus causing to be ascribed to some quack concoction, what was really due to the vivific energies of nature. A colony suffering from foulbrood of the first or malignant grade is absolutely incurable. All that can be done is to remove and melt up the combs and use the bees for starting an artificial colony, or to strengthen a weak one, after having kept them confined in a well ventilated hive on a low diet for forty-eight hours. For though the queen be removed from such a colony, and the bees cleanse the cells of all the offensive matter, the disease will certainly reappear, and usually with aggravated virulence, whenever the queen is reintroduced and brooding resumed. The honey, the pollen, the combs, nay the hive itself, retain the infectious matter. Nothing short of entire renovation will avail aught.

I must, therefore, treat with disfavor all attempts to cure a colony afflicted with foulbrood of the first grade; at least by no process whatever was it curable in Thuringia, when it had once broken out. Even the expelled bees, long kept on "starvation diet," and then placed in a new clean hive, soon became as badly diseased as before. In the summers of 1865 and 1866, being requested to aid bee-keeping friends, I made four attempts to save their bees, experimenting with due circumspection and care, yet without any successful results whatever. And my unhesitating advice now is to subject every colony so diseased to the brimstone process when all the bees have returned at eve, and thus arrest the spread of the evil, which may otherwise soon extend to every colony in the apiary. In 1864, I communicated to the *Bienenzeitung* an account of the utter ruin of an apiary of seventy-seven splendid colonies, caused by the introduction of foulbrood. Dzierzon too seems to have lost all regard for curative processes, for in his latest work, page 276, he says: "The better course is to make short work of it; turn the contents of the hives into money as best we may, and therewith purchase healthy stocks."

2. In like manner, I would advise resorting to the brimstone pit whenever putrid cells are observed in a hive, for we cannot say whether this be not the beginning of a rapidly spreading, devastating, and incurable disease. But if when first discovered a considerable number of hives are already infected, though none extensively damaged, it will be proper to watch matters patiently awhile, for in such case we may regard it as most likely to be curable foulbrood or of the second grade.

3. Foulbrood of the second grade can be more easily arrested and removed, though not without considerable damage. If the queen be removed the workers will have cleansed the cells of all infectious matter long before the young queen begins to lay. The cure will be the more effectual if the combs be removed as soon as the brood has emerged from the cells, and a new hive finally given to the colony. As queen cells are among the first to become putrid, all that have been built in the queenless hive should be destroyed in about a week and a sealed one inserted from a healthy stock.

4. Examine all the hives thoroughly in autumn, at latest in October, when all the brood has matured, and remove any comb that contained or still contains foulbrood in any of the cells.

5. Foulbrood of the second grade not unfrequently disappears spontaneously. But I would advise no one to rely on that. Rather proceed as suggested under the two preceding heads. I have known two instances where the bee keepers remained unconcerned, doing nothing; and in the following summer nearly all their colonies were ruined by foulbrood in its most malignant form.

6. The hives should be well scalded and then fumigated with brimstone. It is also advisable to burn up any propolis they may contain, by means of a blazing wisp of straw, before scalding the hives. After scalding and before fumigating them, they should be washed with a strong solution of chloride of lime. If the disease was foulbrood of the second grade only, hives thus treated may be immediately used again; but if the foulbrood was of the malignant type, it will be safest to set them aside for two or three years. The stands on which foulbroody hives have stood should also be washed with the solution of chloride of lime, and had better be left unoccupied at least one year.

7. As I have no knowledge whatever of the third grade of foulbrood, I can only advise treating it like that of the second grade, where it is supposed to exist.

8. It has been suggested that colonies infected with foulbrood should not be forthwith condemned to the brimstone pit, but be removed to a distance from the apiary for further observation and treatment. I should not recommend this unless some isolated spot were available, within a radius of three or four miles of which no other bees were kept. For it would be morally wrong, though perhaps not legal felony, thus to carry death and destruction within the range of your neighbor's bees.

[Conclusion in next number.]

[For the American Bee Journal.]

The Varronian Theory of Procreation in Bees.

Mr. Editor:—Having in my last communication placed the queen into the desirable condition to lay drone and worker eggs at will, I shall in this endeavor to explain to what use the good people of the hive put some of the worker eggs, and leave the reader to judge whether or not, by this theory, he is enabled to explain all the different degrees of abnormality to which more or less of the members of any swarm of bees may, at times, be subjected.

Abnormalities in the animal kingdom originate in a forced compliance with the normal decree of providence.

Appropriate food maladministered and inappropriate food well administered to the young of any animal constitutes a forced compliance with the normal decree of providence.

In the hive all individuality not reared directly from the egg, *ab initio* as such, implies forced or unnatural compliance.

Fertile queens reared out of season, drone-laying queens, and fertile workers, are abnormalities.

Albumen, according to modern science, is the acknowledged universal starting point of all animal life. Vegetable albumen and animal albumen are chemically considered one and the same thing, atom for atom, subserving one and the same end, to wit: the building up of the animal frame. In the egg albumen exists in its purest and most concentrated form, and in combination with fibrine which is convertible into albumen, constitutes about nine-tenths of the substance found in normal royal cells, where it contains about one-third of nitrogen, and this is the appropriate food of the queen after her exclosure from the egg. This semi-fluid or creamy substance is neither simple salivary solution, coagulum, or jelly, for these substances dry up into an opaque gummy mass when they come in contact with the air, while this royal food does not.

It is, therefore, evident that the greater portion of this substance is an animal secretion and being mixed with gastric juice and pepsin is not only capable of withstanding dessication, but during its exposition in the open cell for several days is capable also of progressing in fermentation, till when the cell is sealing it has attained its utmost disintegration of particles and has thus become a substance of immediate assimilation, and therefore is nothing less than albumino-fibrine peptone.

That this is the plastic material found in normal royal cells, I infer from the facts: 1st. Certain fatty matter is discoverable in it which, although certainly not digested in the stomach of the worker, subserves an undefinable purpose in the composition of this royal peptone; and that, 2d A minute quantity of sugar is discoverable in it which transforming from starch or pollen, and having as yet not had time to completely change into lactic acid, imparts, no doubt, to this royal food its pungent flavor.

From the presence of the above mentioned fatty matter found in this royal peptone, I moreover infer that worker eggs play an important role in it, for it is well known that the yolk of egg contains not only oil in considerable quantity, but also spermatozoids. I believe, therefore, that when the egg from which a queen is to be produced is placed into the royal cell, the workers dose the incipient queen expectant *ab initio*, with worker eggs, prepared by them by simple insalivation, and thus not only furnish it with its appropriate pabulum, but also impregnate this egg, or larva upon its immediate exclosure from this egg, with the spermatozoids present in these worker eggs.

The queen-producing materials in the royal cell are in the beginning tasteless, and so is the white of an egg. A short period afterward these materials acquire a slightly perceptible acescency which increases with the corresponding development of the queen; and this decidedly agrees with the view above entertained that, in the inceptive formation of the queen, worker eggs and spermatozoids constitute its impregnating pabulum, whilst at a later period albumino-fibrine peptone, or assimilable tissue forming paste, is used. And here I stand face to face with Dzierzon, without however denying parthenogenesis, as I explain it:

"That when the eggs have once been laid, as Dzierzon asserts, the sex of the bee to be hatched from it is already unalterably fixed therein, and that neither cell nor food can subsequently exert any influence on it in this respect," is in fact no fact at all, and I think it is much easier to disprove this proposition than he imagined when he wrote his refutation to Dr. Landois' untenable theory. How does it happen, sir, that there has never yet been raised a perfect queen from eggs singly introduced into a colony or nucleus, with the especial intention of rearing a queen therefrom, when no worker eggs, although all other requisites, were present in such colony or nucleus? I may admit that a crippled queen might be produced from the egg so introduced, but deny *in toto* that she will ever lay any eggs at all. As positively do I deny that there was ever a drone egg laying queen that was not directly reared from the egg, *ab initio* as such, i. e., a queen that failed to mate with the drone, possessing the lower potency of fertility, as Dzierzon would express the idea. And how does Mr. Dzierzon account for facts like these?

Is some one ready here to tell me I take sides with Dr. Landois, and believe with him that sexual development depends solely and exclusively on nutriment? I reply, no, sir, not in the least, for I am as well aware of the fact that there is no difference in the food administered to drones and workers, as I am confident there is between the food of these and the royal peptone with its aliquot portion of worker eggs containing spermatozoids.

Nor do I believe it is committing the unpardonable sin to dissent from an unproved assertions of Rev. Dzierzon, Rev. Kleine, Baron von Berlepsch, or any other honest, scientific, and practical apiarian observer, European or American.

Now, Mr. Editor, it is either true that the sex of the bee is already unalterably determined when laid, or it is not. If true, the allegation of Dr. Donhoff having reared in the summer of 1855 a worker larva from a drone egg artificially impregnated falls to the ground unheeded. On the contrary if it be not true that the sex of the bee is thus unalterably determined when laid, then it follows that Dr. Donhoff's allegation amounts to a truth, and Dzierzon's assertion amounts to nothing more than an unguarded statement, which needs further proof before it is entitled to credit.

If Dr. Donhoff by artificial impregnation has succeeded in rearing a worker larva from a drone egg, then my allegation that the workers by means of royal peptone with its aliquot portion of worker eggs containing spermatozoids, can effect additional impregnation upon the impregnated egg in the royal cell, also becomes a self-evident truth, and my theory stands thus:

1st. Drones are the offspring of a queen reared from the egg as such, and possessing the lower potency of fertility by having been impregnated in her cell by worker eggs containing spermatozoids.

2d. Workers are the offspring of a queen which in addition to the lower potency of fertility, met the drone and thus became endowed with the higher potency of fertility also.

3d. Queens are the offspring of queens possessing both the lower and higher potency of fertility, but being fed by the workers and impregnated as above explained, become queens instead of workers, the latter being fed for five or six days upon worker food and thenceforward upon honey and pollen, whilst queens are fed upon royal peptone.

That the bees in the instance of rearing their queens, at least understand their business as well as their keeper; that they remove eggs from worker cells; and that Rev. Dzierzon has never seen fit to disprove these facts, cannot be conscientiously denied by any apiarian who is not prejudiced in favor of parthenogenesis as hitherto explained; nor will I deny, on my part, that He who could unlock the jaws of Balaam's ass of old, and cause him to talk Hebrew, could constitute the queen that she might lay unimpregnated eggs producing living drones by miracle, even now, if He would.

That the drone is a living creature—that all life is derived from the giver of all life, and that all living things begin to die as soon as they commence to live, are truths consistent with religion, philosophy, reason, and common sense; and he who would consistently fulfil his destiny will not blindly cling to one of these God-given blessings to the exclusion of all the rest—will not doggedly and dogmatically insist that nature has made one exceptional law for the bee hive, another exceptional law for the ant hill, and another for the butterfly, simply because he cannot penetrate the veil of infinity by means of the microscope. Is therefore a mathematical problem unsolvable because I cannot solve it? I must, for reasons like these, be excused for believing that there can be no finite animal life without finite animal impregnation, either direct or indirect, and that my faith in the beautiful and harmonious concatenation of nature is more powerful than the magnifying lens.

As the course of transformation by which albumen is converted into the various bodily tissues, has not yet been traced with anything like certainty, we need not wonder that we cannot trace with scrupulous exactitude the course of genetic perpetuation of life in the queen's eggs anterior to their being individually endued with a higher potency of fertility by means of the theca seminalis, and hence we must rest satisfied for the present with the logical deduction that if man can artificially impregnate an unimpregnated egg to produce a worker, the workers likewise can impregnate the egg in the royal cell to effect the genetic perpetuation of life in the queen's eggs anterior to their passing the discharge pipe of the spermatheca.

Yes, yes, I understand you, says some doubting Thomas, and if you can discover to me living spermatozoids in the royal cell at any time, I must confess the consistency of your theory. Well, sir, as I have never seen any of these things there myself, unless it be that little wet speck upon which the royal egg is placed, I ought perhaps to modify my assertion by saying that I could see no living spermatozoids in the cell either, when Dr. Donhoff raised his worker larva from the drone egg, and that I could never succeed to investigate with the microscope the ligula of each individual bee as it tended the royal nursling in its cradle. Two bushels of gypsum to an acre of well set clover lay will increase its yield three and fourfold, if applied at the right time, and yet the agricultural chemist would not presume to find an additional trace of sulphuric acid in this soil at analysis.

Why, my dear sir, I do not travel this new road alone. Here I meet the learned Huber, who could conceive that workers raised in proximity to royal cells may have received some royal jelly and thus become fertilized; there the penetrating Dzierzon could assent to this reasonable view, and further on the liberal Berlepsch could endorse the opinion of both. Still, four travellers may follow the same road and yet at its terminus each may tell you a different story. I differ in my story only in this with them, that I attribute the fertility of fertile workers to their pabulum of worker eggs and spermatozoids *ab initio*, whilst they attribute it to royal jelly. They commit the egregious error of attributing to the alimentary functions of the bee, that which, according to reason, philosophy, and anatomical research elsewhere is attributable only to the organs of procreation, whether perfectly or imperfectly developed.

Drone egg-laying workers, according to my theory, originate when the bees, on suddenly being deprived of their queen, are prompted to commence numerous queen cells. The eggs in worker's cells chosen to be transformed into queens, are dosed simultaneously with the incipient transformation of the cells with worker eggs, as above explained. A majority of these intended royal eggs and cells are, on further consideration, abandoned by the bees, but the eggs so dosed will ultimately hatch into drone-laying workers.

This explains the fact that in colonies that have no queens, but have worker eggs, unsealed larvæ, or larvæ in royal cells, no drone eggs are laid. It also explains that other indisputable fact that drone eggs are never found in queenless colonies before the lapse of three weeks after the loss or removal of the queen.

If any person pretends to have evidence on hand to disprove these two facts, let him reconsider it before publicly committing himself; for all such evidence is delusive—in short, it is not true.

On page 48, volume 3, AMERICAN BEE JOURNAL, Dzierzon substantially says: "I am fully persuaded that when the egg is once laid no subsequent artificial impregnation can effect a change, because it has then already lost all capacity for impregnation, as the micropyle becomes immediately closed and the entrance of spermatozoæ is forever barred." Indeed! Why, my dear sir, lacteals are always created without any micropyles or small holes where they come in contact with the intestinal cavity—the lacteal extremities are wet—wet repels oil, ergo, the entrance of oil through the wet membranes of the lacteals is "forever barred," and your assertion as above quoted must be considered final. Now this reasoning, it will be admitted, is just as logical as Dzierzon's, and moreover it is like it not worth anything, for oil does enter the lacteal extremities; but how it enters there, despite of seeming impossibilities, is none of my business to explain in this connection. The microscope says it is there, whether Mr. Dzierzon says so or not.

So much as to Rev. Dzierzon's assertion. And if my explanation of parthenogenesis cannot stand, I shall have at least the satisfaction of knowing myself not alone in the wrong. We'll go down together.

But lo! here comes my friend Thomas, to inform me that I believe in absorption and circulation too. Well, sir, as you like it. Call it absorption or impregnation, only please excuse me for believing in absorption that bears with it the semblance at least of probability; for by my theory I can consistently account for the impurity of Italian queens when reared artificially—can account for crippled queens artificially reared—can account for the multiform appearance of

Italian drones, and consequent various sorts of pure Italian ringstreaked workers. But as here we enter upon forbidden ground, I will suspend further remarks under this head till Mr. Grimm has sold his purely impregnated, pure Italian, colored queens, lest he accuse me again of having derived all my knowledge about this matter from half a dozen well marked pure queens, and about half a dozen more of their daughters. Success to you, brother Grimm, but please don't ask me to exchange one of my Langstroth queens for a pure Italian just imported. F. VARRO.

[For the American Bee Journal.]

A New Theory.

How does a queen bee lay drone eggs in drone cells, and worker eggs in worker cells?

Dzierzon says the queen possesses the ability to lay male or female eggs at pleasure, as the particular cell she is at any time supplying may require.

Mr. Wagner's theory is that the width of the cell determines the kind of egg deposited, the drone cell allowing the egg to pass out unimpregnated, whereas the narrower worker cell causes a compression of the queen's abdomen and a discharge of the seminal fluid from the spermatheca, sufficient to impregnate the egg and produce a worker bee. When it was objected to this theory that the queen could lay worker eggs in cells not more than an eighth of an inch in depth, and which, therefore, could not compress the queen's abdomen, Mr. Quinby suggested in support of this theory that, perhaps, at the moment of laying, the contents of the abdomen were crowded down to such a degree as to touch the sides of a worker cell, even not more than an eighth of an inch in depth.

Prof. Varro in the December number of the BEE JOURNAL, advances a new theory, which may be called in brief the theory of voluntary contractility. This theory gives the mother bee power to produce male or female offspring at will, merely by an effort of contraction, or the omission of such an effort. It may be the true theory, but it does not seem to me to differ much from Dzierzon's; it rather expands or explains his. If this theory be true the mother bee has a power over her offspring not possessed by any other individual in the animal kingdom, from the lowest species up to man himself. Such a theory seems to imply a train of thought in the queen's mind at the laying of every egg somewhat as follows: The queen coming to a worker cell says to herself, "here is a worker cell; in this I will have a daughter," and forthwith giving a little sqeeze in some direction, the thing is done. Passing to a drone cell, she says to herself, "lo, here is a drone cell, in this I will have a son," and depositing an egg without the little squeeze, her will is accomplished. In busy times when laying two or three thousand eggs per day, she would be obliged to omit most of the above, and content herself with the main idea, which could not in a single instance be omitted without liability to mistake, viz: "son," "daughter," "daughter," "son," and so on to the end of the busy season, as she came upon one or the other kind of cell.

It is generally conceded that the Dzierzon theory of reproduction in bees is true in this, viz: that drone eggs are laid unimpregnated, and that eggs producing workers and queens are impregnated at the time of laying from the seminal fluid contained in a sac, situated near the extremity of the abdomen and connected with the oviduct by a long and narrow channel or duct. This sac is readily found by the naked eye in any dissected queen. Its contents if taken from a fertile queen and crushed upon the thumb-nail with a knife blade, appears milky white; if submitted to microscopic examination and compared with the seminal fluid taken directly from a drone, it appears identical with that. Seminal filaments or spermatozoa, precisely like those found in a fertile queen's seminal sac, and in a drone's semen, have been discovered by the microscope in worker eggs, and their absence in drone eggs has been as clearly proved by the same means. The question now is, why are they, or how are they present in one and not in the other? or how can a queen impregnate every worker egg and avoid impregnating every drone egg without making a single mistake? Can it be explained without assigning to a queen bee a power of judgment, memory, will, and general intelligence far above that possessed by the whole remaining catalogue of animate beings? To be sure, it will make but little difference to practical bee-keepers whether this question is ever settled. Still, it is rather interesting, and indeed, if my new theory is correct, it may lead to an easy method of lessening the amount of drones produced in any hive. The new theory, in brief, is this: "the depth of the cell determines the kind of egg." An ordinary fertile queen can lay impregnated eggs in any cell, from the depth of an eighth of an inch to the full depth of a worker brood cell. Any person who has seen a queen in the act of laying (and any one may do this in the height of the breeding season, by taking out the comb on which the queen is and holding it for a few minutes,) must have noticed that her abdomen nearly disappears, even in a worker cell, and that her position seems to be very awkward and difficult to maintain while in the cell. I have never seen a queen laying in a drone cell, but from its greater depth, it must of course be still more difficult for the queen to reach the bottom of it to deposit an egg. Now, perhaps, this very difficulty of reaching the bottom of so deep a cell, may cause such an elongation of the abdomen of the queen as so close involuntarily the mouth of the duct to the seminal sac, and hence prevent the egg from being impregnated. I have never known a queen to lay in drone comb of less than the full depth. I do not know of any facts that this theory does not explain. It is simple and does away with the necessity of attributing such unusual physical and mental powers to the queen bee. Does it not explain the result of the laying of Mr. Quinby's very small queen mentioned on page 115, BEE JOURNAL for December? She could reach the bottom of the shallow or unfinished worker cells with fertilized eggs, but the effort to reach the bottom of the full-sized cells was too great, the duct was closed, the egg was deposited unimpregnated, and the result was a drone in a worker cell.

The practical advantage to be gained. supposing this theory to be true, is this. We could prevent drones from being produced by cutting down the drone cells to a shallower depth. Still the bees might rebuild them to the full depth in a short time and frustrate the plan.

In conclusion, I think it sufficient to say that instinct impels a queen bee to lay eggs, and to lay them in the cells of honey comb, and most of them in worker cells, and I assume that she is so organized that her eggs are impregnated by the very act of laying, whenever she lays in cells of any depth up to the full depth of a worker cell, without any exercise of will or volition on her part. Also that she is so organized that when she attempts to lay in any deeper cell, the egg is necessarily and inevitably unimpregnated.

R. BICKFORD.

SENECA FALLS, N. Y., Dec. 24, 1867.

[For the American Bee Journal.]

Side-Opening Hives.

The correspondents of the December number of the JOURNAL seem to be very prolific in fault-finding with side-opening hives; and as it seems to be principally directed at the American hive, let us examine the matter on that basis. One has tried it on his long low hives, and does not see much difference; yet he finds cases in which it is an advantage to have his hives side-opening. If he will try the American hive in its proper form, I think he will find other and material advantages. Another finds the fixed frames glued together, and causes a jarring in prying them apart. A very slight movement of the frame disengages it entirely, which is easily effected by crowding the blade of a knife between two frames without any jarring whatever; while in the Langstroth hive the frames are glued to the rabbet, and in disengaging the first frame or two they have to be moved sideways, one frame toward another, crowding and irritating the bees. Again he finds it difficult to put the frames in on account of crushing the bees. A very little smoke would obviate that difficulty. The irregularity in the combs usually occurs at the top of the frames in the store combs, and causes no trouble when placed back in their former position; but if placed in another hive, or their position changed, they should be trimmed with a hot knife. Even in the Langstroth hive it takes but little irregularity to require the leaving out of a frame; and then the disposition of the bees to occupy all the space will increase the irregularities. There are but few cases in which there is a necessity for looking at a particular comb. The accidental breaking of a comb may be one; and in that case the advantage of a side-opening hive is obvious. In looking for a queen in the Langstroth hive, it is the better plan to commence taking out the frames at the side of the hive, giving a chance to separate the frames where the bees are principally clustered, rather than lifting one frame from between two others where the bees are clustered thickly, disturbing them more and being more likely to alarm the queen and render the search for her more difficult.

But your correspondent, D. M. W., seems to have the most trouble, and I think frequently referring him to the writings of his friend Langstroth, may coax him into good humor. In the first place, he thinks no one could claim a patent for movable frames. An improvement in the form or method of using them might possibly be patented, as three of the six claims of Mr. Langstroth's reissue are for that and nothing else. Secondly, he thinks no one would claim a patent on the upright form of hive. Mr. Langstroth in his work on pages 329 and 330, says: "A tall hive in proportion to its other dimensions has some obvious advantages," yet "it would be impossible to use frames in it to any advantage;" and in a note, says "the deeper the frames the more difficult it is to make them hang true on the rabbets, and the greater the difficulty of handling them without crushing the bees or breaking the combs." If any one has attained the desideratum, evidently but ineffectually sought for by Mr. Langstroth, viz: the tall form of hive in which frames could be used, he should be leniently dealt with by Mr. L.'s friends and allowed his own time to answer their queries.

Thirdly, In coming to the conclusion that no one could obtain a patent for side-opening hives, I think he has fallen into an error, perhaps from reading an editorial in the October number of the BEE JOURNAL, in reference to the time when Mr. Langstroth made them, which he might have avoided if he had read carefully the circular, in which he says Mr. L. gives the claims of his patent, as it is there distinctly stated that it was in 1854 that he made them and his hive was patented in 1852. In 1854, Mr. Langstroth tried but failed to adapt to his patented hive the side-opening form, which the German apiarians have used for thirty years, and which is now used by a greater number of them; though Prof. Varro says "movable sides have been coherently reasoned out of use long, long ago." Yet the hive used by the Germans seems to be of the worst possible form, being long and low, and opening at the front or rear, requiring the frames to be placed across the hive. And this was the form in which Mr. Langstroth made them, (as appears from a note at the foot of page 187 of his work), and opened at both ends, thus requiring a stationary honey-board or some other contrivance for keeping the sides in place, which would render it a very clumsy apology for a side-opening hive. Certainly the inventor of the American hive is entitled to the thanks of bee-keepers for having by a side-opening hive adapted the movable frame to the tall form of hive. notwithstanding the ineffectual attempt of Mr. Langstroth to adopt the side-opening principle to his long low hive may have rendered side-opening hives unpatentable.

Fourthly, The using of two boxes for surplus honey, he thinks, is an idea of Mr. Quinby's. If so, it is not the only good idea published by him for the benefit of the public, without asking a patent.

Fifthly, I do not discover anything in the work alluded to claiming the American hive to be weather-proof, except its being well clamped to prevent warping. The weather-proof part was the claim of a correspondent of the Bee Journal.

Sixthly, D. M. W. finds something that may be patented. But how is he to know? As he gets no information from the patentee, he had better refer to the Patent Office Report for 1863.

Seventhly, Entrance regulator complicated and not worth much. This idea must have been derived from the engravings of it, as it is no more complicated than the blocks, and is at least as useful. J. H. Smith.

Fremont Centre, Ill., Dec. 14, 1867.

P. S.—Is false reasoning or a misstatement of facts by a person interested in a patent, any worse than by one not so interested?

J. H. S.

[For the American Bee Journal.]

Deep Langstroth Hives for Wintering Bees in the Open Air.

Mr. Editor:—In the December number of the Bee Journal, Mr. L. C. Francis asks, "What is the best height for the movable comb hive when the bees are wintered in doors?" At some other time, I hope to reply to this question; but will now offer some suggestions which may serve to determine more satisfactorily the height of frame best adapted to wintering bees in the open air.

The interior dimensions of the Langstroth hive, as used in our apiary, are eighteen and one-eighth inches from front to rear, fourteen and one-eighth from side to side, and ten inches deep. In a previous number, you have referred to the mistake made by many, in supposing that the Langstroth hive is *necessarily* a shallow hive. Those who think that a deep hive would be better for wintering bees in the open air, may easily make such a hive on the Langstroth principle, and yet secure abundance of room for the storage of surplus honey; *more* even than is given in the ordinary construction of this hive.

Let the inside dimensions be twelve inches from front to rear, fourteen and one-eighth from side to side, and fifteen inches deep: we now have the same cubic contents as before. Extend the sides so as to make a back portico of the same size with the front one, make the roof of both front and back porticoes on the same level with the honey-board, so that they form an extension of the same.

The back portico needs no bottom, and when the ventilator is open will be a cool, sheltered place for bees to cluster in very hot weather. Let the cover of the surplus honey boxes extend over both porticoes; if made about eleven inches deep, two tiers of boxes may be used on the plan first suggested by Mr. Quinby. You now have storage room for over one hundred pounds of surplus honey, and by removing boxes as soon as filled, for as much more as may be needed by the strongest stocks in the best seasons and locations. We shall try a few such hives in our apiary the coming season, and in order to test sooner their relative value for securing surplus honey, we shall cut out the comb from some of our hives of the present pattern, and fit them into the deeper frames, which by turning them sideways, can be done with very little trouble or waste.

If a number of practical apiarians using our hive will make a few of these deeper hives, reliable reports may be given at the close of the next season, as to their comparative yield of surplus honey; and by another winter, their relative value for wintering bees in the open air may be tested. L. L. Langstroth.

Oxford, Butler Co., O., December, 1867.

[For the American Bee Journal.]

Various Matters.

Mr. Editor:—I see many practical hints in the Bee Journal for the management of bees, and I hope to see many more.

One of the most important points is the surest way of getting straight combs in the movable frames. Mr. Tomlinson, in the August number, has hit upon the right plan. I think it will not fail, unless the season is unfavorable for gathering honey, or the swarm is too small to fill the hive. It takes but little trimming to accomplish all that is desired. If there are any crooked combs I make them all as straight as possible in the spring, when there is little or no honey in them.

I do not allow my artificial swarms to build any combs in the frames until they have a fertile queen, as they are apt to build too much drone comb. I make the new swarms as strong as possible, and expect them to store a large amount of honey in the boxes. In making these new swarms, I fill the hive with the best sealed brood I can spare from my strongest swarms, and usually take but one or two frames from each hive. I then put the new hive on the stand where an old one stood, moving the old one to the right or left a little more than the width of the hive. If too many bees leave the old hive, change places with the hives, or put the old swarm nearer the old stand and the new one as much away. I think it better to make the new swarms in the early part of the day, and only on such days as the bees work well, avoiding all cold and wet weather. I keep all swarms as strong as possible, and only make new swarms to guard against natural swarming. I do not see my bees at all on week days from 8 o'clock A. M. to 5 P. M.

It takes but little time to manage my bees in this way, and I am convinced that I get more honey than I should do if I allowed natural swarming. This year I shall try to give all my new swarms a sealed queen cell, or a young queen, when I make them. I have not yet had a swarm with a young queen make any preparation for swarming.

Bees should have room in proportion to the strength of the swarm. A small swarm in a large hive will not increase as fast as they will in a hive that they can warm and fill. For this reason, when I take more than three frames from a hive at a time, I put in a division board so as to confine their labors to a smaller space, and give more room as soon as I think they require it. I try to have straight combs on each side of all combs being built. This will insure straight combs in almost all cases. I use any kind of old cotton cloth to smoke my bees with, and like it best made into a rope or bundle, a foot or more long, and bound every two inches with fine wire to check the burning at those points.

When I wish to handle the bees to make new swarms, put on or take off the boxes, I light one end of this cotton rope and place the smoking end under the hive for a few moments, then take it out and proceed to business. If the bees get in my way on the combs, blow a little smoke on them and drive them where you wish.

L. C. WHITING.

EAST SAGINAW, MICH.

[For the American Bee Journal]

Surplus Honey.

James McMullen in December number gives some experiments in obtaining spare honey in frames of various heights, which, as a link in a long chain of facts, obtained accidentally and by experiment in various parts of the country, is of the greatest importance.

For, disguise the fact as one may, the main point in practical bee-keeping is now, and must ever be, how to obtain the most money.

While it is true that a few breeders of Italian bees, or may be Egyptian, find a fair sale at remunerative rates, the great mass of bee-keepers must rely on surplus honey as their main source of profit. This fact is one, not for the few, but the many to answer. The whole community is interested, not so much in the curious mechanical instincts and newly-discovered exceptions to them, as in the supply of a fine and abundant article of honey in convenient form and at reasonable rates. A great strife has existed among makers of hives, and those who do not wish to buy them, and among breeders of Italian and other queens, and those who do not care to pay fancy prices for fancy stock, which it is not certain they can propagate.

While this "war of races" and clash of hives may not be without its use, it will be acknowledged that the main hope of the practical bee-keeper is, in a practical application of the knowledge gained by those keeping bees for surplus honey.

It seems strange, when it is well understood that nearly all the honey stored in a bee hive is stored within an inch or two of the brood, that the fact has not arrested the attention of every observing bee-keeper. It is well known that however tall the hive, if it does not contain honey, the brood is invariably started near the top, and if honey occupies the top the brood is deposited as near to the honey above it as possible. If then the honey is gradually used out leaving more room above the brood first started, it is promptly occupied by the queen, in preference to passing down the combs. It may be set down as one of the few rules to which there are no exceptions, that a queen never accepts a lower place on the combs in which to deposit her eggs, until compelled to by the storing of honey above. From this fact it will be seen that the workers, to all intents and purposes, not only dictate where the brood shall be deposited, but also where the honey shall be stored.

In obedience to this instinct, if tall cavities are formed above the brood, or wide ones around it for the reception of surplus honey, the combs radiating from a common centre will be projected into them, or they will be neglected altogether, rather than start their combs from the top or most remote part.

From these facts, which no one familiar with the management of bees will deny, it will be plain to every observer that in order to obtain the prompt acceptance of surplus cavities and the greatest amount of surplus honey, broad, shallow cavities, or better, a series of small, shallow boxes, containing in the aggregate not less than fifty pounds, should be provided in close proximity to the brood. The promptness with which bees accept spare boxes when put on immediately after hiving, and while the queen is depositing eggs just below them, is a fair illustration of this fact.

The crowning spare honey excellencies of the Langstroth hive, are due more to its broad, shallow form, than to its movable frames. The triangular hive used by me is another and perhaps the best illustration of this principle.

T. F. BINGHAM.

ALLEGAN, MICH, Dec. 23, 1867.

[For the American Bee Journal.]

How to Cut a Bee Trêe.

NOVICE wants to know how to cut a bee tree and not disturb the bees. Here is my plan, and I have cut quite a number, always with success. In the first place, I determine which way the tree leans, or which way the heaviest part of the top is. I then set up my ladder on the opposite side of the tree, and if one ladder will not reach to where the bees are, I tie two or three together till of sufficient length. Of course I have one ladder of my own, and borrow of my neighbors to make out the balance. I take along with me an auger, a hammer, an axe, some short boards for stageing, some nails, and rope enough for all purposes. Secure the ladder at the top to the tree with a rope or chain, then build a good stageing, and make it secure on the upper side of the tree, and high enough to stand on and work above the hollow where the bees are. Now take the auger and bore into the tree to ascertain how far up the hollow extends, as you only want the part the bees and honey are in. Have some cotton rags in your pocket to stop up the hole if you chance to bore into where the bees are. The entrance where the bees pass out and in also requires stopping in the same manner. After finding where the top of the hollow is, you want a good coarse sharp hand saw, with which saw in on the under side of the tree four or five inches. Then saw the balance of the tree off on the upper side. After sawing in a little more than the width of the saw, drive into the saw-cut some good hard wedge to keep the saw from pinching; also to make the top fall in the direction you wish. It is better to cut another saw-cut on the under side, slanting it down into the first cut to take out a piece. It will fall properly if cut entirely clear of the stub. A dry day when there is no wind should be selected for this work. Now the top is off, the next thing is to find where to saw off the hive just below the combs. This you can ascertain by using the auger again. Next you want a good long rope, strong enough for the use intended. Tie this around the hive and bore a hole through a small tree near the ground to fasten your rope to. If a small auger is used, put a pin or peg through the hole, or if a two inch auger, put the rope through the hole. Now saw off your hive and set it on the stageing, cut a couple of notches in the stub for the rope to render in. Place the rope in those notches over the top of the stub. As soon as you saw off the hive, tie a cloth over the bottom to keep the bees in. Tighten the rope at the bottom, see that all is right, knock down your stageing, drive your sled or wagon under, with plenty of straw in it, then ease away on the rope and down come your bees, "right side up with care."

The whole performance need not occupy two men more than two hours after you get to the tree. Of course this operation can be varied according to circumstances. Should the tree be extraordinarily large, cut it down on a warm day in April, when the comb is nearly empty, and transfer at once. That is, chop down the whole tree. ELISHA GALLUP.

OSAGE, IOWA.

P. S.—If those bees were mine, I should take them down at once—that is, if the tree is not too large.

[For the American Bee Journal.]

Hermaphrodite Bees.

Several years ago I had a queen that produced about one-tenth hermaphrodite bees among her progeny. This fact was noticed early in the spring. The queen was an Italian, introduced late the previous fall. These hermaphrodites were thrown out continually by the workers, as fast as hatched, and were of all imaginable mixtures between workers and drones. Some had the head and thorax of a drone, and the abdomen of a perfect worker, while others seemed by external appearances to be perfect workers, but on examination were found to possess the male organs of generation. Others, *vice versa*, would appear like perfect drones, only possessing the pollen cavity of the worker, while others again would almost appear like one-half drone and one-half worker, blended together lengthwise. This queen was as prolific as others, as the colony was steadily on the increase during the spring, till another queen was substituted for her sometime in May. How such brood, possessing these mixed characteristics is produced, is a mystery to me; at least I will let others decide.. R. B. OLDT.

NEW BERLIN, PA.

[For the American Bee Journal.]

Alsike Clover and Other Crops for Bee Pasturage.

In the spring of 1866, we had sowed near our apiary, in the town of Watervliet, Albany county, New York, a field of about two acres of oats, and seeded the same with Alsike clover, at the rate of about four pounds of seed to the acre, (which, when it germinated, we found some what mixed with red clover). This season, 1867, this clover was in bloom about six weeks, and bees, both Italian and black, worked on it daily during that time; suffice to say, the field was literally "a sea of flowers," and bees appeared as fond of it as of Mignionette.

We had only a few swarms of bees, having lost an apiary of about sixty colonies, by "foul brood." But, suffice to say, that from five colonies of Italian bees, we took 600 pounds of box honey, and from one Italian swarm, we took one swarm of bees, and from these two 320 pounds of super honey, which sold at forty cents per pound—the bees having plenty of honey in the hives to winter. We value the Italian swarm at $15, and the honey brought $128—thus the total profit on this swarm for 1867, was $143. We hope this may have been excelled in the State of New York, but we think Alsike clover had much to do in producing the foregoing result, as we had one other small field—in all say three acres.

We think so much of it we have imported some more seed from Europe, and hope to sow more and have some to spare to those who may need.

From what we have witnessed with Alsike clover the two past seasons, we should think that two acres of Alsike clover would, in a good season, furnish honey sufficient for one hundred and fifty or two hundred colonies of bees. And as this crop is excellent forage for cattle, as the stalk is always green when most of the seed is fully ripe, it makes a good quality of hay when ripe enough to save the seed, which is not the case with red clover generally. Moreover, the seed threshes very easily and can be liberally secured by a common flail or threshing machine.

We give it as our opinion, that if every farmer would put one-half of the land now seeded to grass seed into Alsike clover seed, bees might be very profitably multiplied in our country an hundred fold, and each hive furnish many times its present profit, and quite as many cattle sustained by the arrangement as at the present time.

We fondly look forward to a day, only a few years in the future, when crops will be sown largely with a view to profit from bees as from other stocks; and that, when that time arrives and apiarian science is widely extended, so as to empty combs of their honey and preserve the combs, that a single swarm of bees will be found to give from 300 to 700 pounds of surplus honey in a single season! Why not? Let us make a calculation. It is agreed that it requires about one pound of comb to contain twenty-five pounds of honey, and to make one pound of comb, about from fifteen to twenty pounds of honey are requisite.

Now, if single swarms can be found that are well supplied with white and Alsike clover that will deposit in boxes, (making all the comb of course,) three hundred and twenty pounds of super honey; if we suppose one pound of comb requisite to contain twenty-five pounds of honey, then we must have about thirteen pounds of comb to contain three hundred and twenty pounds of honey, and each pound of comb using from fifteen to twenty pounds of honey to make it, would, at the lowest calculation, give us one hundred and ninety-five pounds more of honey. So, that, if our bees could also be furnished with a full supply of empty clean comb, as well as Alsike clover, (which can be done, we are informed, by emptying our frames of comb with a machine,) we should obtain, according to above rates, five hundred and fifteen pounds of surplus honey per swarm!

Now, if we may additionally suppose the bees supplied in spring with honey-producing crops, such as seed turnips, mustard, rape, &c., and in the fall with buckwheat, sweet, or Mellilot clover, borage, &c., this product might be easily increased one-half, which would give us, say seven hundred pounds of surplus, in a single season as the product of one swarm of bees.

We know this looks as speculative as it did forty-five years since, to talk of travelling on a road thirty-five to forty miles per hour, and draw hundreds of tons with one steam horse—which your correspondent remembers well was hooted as the vagaries of a fanatical brain—but now almost every child is familiar with the fact of its being done daily.

Let our farming apiarians raise crops for our bees, as well as our beeves, and it will pay us a better per cent on the capital invested! For to carry our speculative calculations a little further, suppose we sell seven hundred pounds of honey (the anticipated product of a single colony in the good time coming) at twenty cents per pound, we have a profit of $140 per colony! Enough to buy two good beeves, and which will not cost a tithe as much to produce.

Giles B. Avery.

Albany, N. Y.

[For the American Bee Journal.]

Answers to the following questions are desired:

1st. Will white clover, as a honey-producing plant, grow as far south as Florida? If not, what is the Southern limit at which it will grow?

2d. Will borage do as well there as North, when cultivated for bees?

3d. Does buckwheat yield honey South?

4th. Is the yield of honey greater in the South per swarm, than in the North on an average of seasons?

5th. How many months in the year do bees fly out to gather honey in the latitude of Florida, and gather as much per day as they consume?

6th. Could a skilful apiarian, using frame hives, get a larger yield of honey South than North—swarms being of same size and seasons the same?

J. M. Price.

Buffalo Grove, Iowa.

[For the American Bee Journal.]

Success in Keeping Bees.

Several parties have written to me about Silas Way's success prior to the present year, in the keeping of bees. (See Bee Journal, Vol. 3, page 99). My first acquaintance with Mr. Way was in the summer of 1861, since which time I have frequently visited him and his apiary. At that time he had about sixty hives of bees, and I do not think he has had less than that number at any time since. He has kept about one hundred colonies for the past two seasons, and now has nearly two hundred. The number has lately been reduced by sales. But in case he cannot sell at proper figures, the fullest combs of honey are taken away and sold in glass jars. The central combs, those having but little honey, are put away for next year's use. The bees are of course destroyed.

I do not know precisely what the *profits* of Mr. Way's apiary have been from year to year since 1861, but have good reason to believe that the average has been not less than ten dollars per hive for those wintered over. He always winters his bees in the cellar of his house, and seldom loses any. This is boarded up around the ends and sides, and is also provided with a floor. It is perfectly dry and dark, and easily ventilated. It is about sixteen feet square. He proposed to put all his bees into it this winter, and probably did so about the last of November.

Very few bee-keepers, even with frame hives, have had such an average success for so long a time as Mr. Way. Some three years ago he adopted the frame hives, but has given them no more attention than he would the box-hives. He has, however, concluded that *it will pay* to give them more attention hereafter. He seems satisfied that bees will store a hundred pounds as a surplus, to the family, if given proper attention.

M. M. Baldridge.

St. Charles, Ill.

[For the American Bee Journal.]

Diseases of Bees.

An article with the above heading appeared in the Bee Journal, Vol. 2, page 154, in which the writer complains of a disease as he terms it, which affected his bees. This is common, though not commonly known. I am happy to inform the writer that the trouble with his bees was not a disease, but caused by the bees working at the blossom of the silk-weed, (*Asclepias cornuti*). Both sepals and petals of this flower are turned backward towards the stem, forming by five acute angles as notches, a good trap to catch and hold a bee. The flower being thick and firm, holds the bee fast, and struggling only draws the insect deeper in the cavity. The trouble then is the pollen of the silk-weed, which attached itself to the foot of the bee. A minute description of this will be found by referring to the "Mysteries of Bee-Keeping Explained," by M. Quinby, last edition, page 82.

New Berlin, Pa. R. B. Oldt.

[For the American Bee Journal.]

Surplus Honey Receptacles.

Mr. James McMullin, in an article entitled "Building Combs and Storing Honey," page 114, Vol. 3, Bee Journal, says: "The best mode of securing surplus honey should engross the attention of the bee-keeping public." I agree with him fully, and wish more bee-keepers would give their experience and their views on this subject. I am more and more convinced that bees will work in proportion to the room given them by their keepers. That is, *the larger the space given them at the proper working season, the more comb, honey, and brood they will produce.* Of course this can be true only up to a certain limit; but I think the limit is not reached by a majority of bee-keepers. Especially is it not reached in receptacles for surplus honey, mainly because the shape of the hive will not admit of it; all hives that I have ever seen, except the broad and shallow form preferred by Mr. Langstroth, being too small upon the top to furnish sufficient room for honey boxes. It does not avail to say that when one set of boxes is filled you can replace them with another, for, in most seasons, by the time one set of boxes is filled, whatever their size, the honey harvest is past. The true way is to have room for the full capacity of the swarm from the moment they begin to store surplus honey. Then all the bees in the hive that are fitted to labor have room to work, and they *will* work.

I make my hives even broader than Mr. Langstroth recommends, namely: eighteen inches square, which, with the sides one inch thick, and the ends one and a quarter inches thick, requires a honey-board twenty by twenty and a half inches. This entire surface—not a quarter of an inch is lost any where—I cover with eight boxes, holding, when full, six pounds each. On the top of these, I place eight more of the same size, making sixteen boxes—with glass sides and ends, ten and a quarter inches long, five inches wide, and four and a half inches high, put on one hive all at once at the beginning of the honey harvest—say when the white clover comes into blossom—provided the early part of the season has been propitious; if otherwise, a little later. It is a great disadvantage to put on surplus honey boxes too early, as much of the heat of the hive required for maturing brood, is thereby lost. Every surplus honey box should be supplied with as much clean white comb, firmly stuck on, as can be spared. A small piece is better than none; even *a few cells* will sometimes induce bees to commence work in a box, when an empty one would be entirely neglected. The use of good clean comb in surplus honey boxes cannot be over-estimated. Did Mr. McMullin use such pieces in those honey boxes which his bees failed to fill? If he did, his experience is different from mine. I have *never failed* to have bees work in boxes containing comb, even with the honey-board separating them from the main hive. I have seen my bees at work in sixteen such boxes on one hive at one time. I believe they would have worked in more as readily, but I thought sixteen would do. I think, however, I shall adopt Mr. Alley's plan for boxes—just half the size and width of those I now use, viz: two and a half inches with glass *sides* only. This will give one good thick comb in each box, weighing box and all, about three pounds. I believe it will sell better in this quantity and in this form than in any other. This size would give room on the top of my hives for thirty-two boxes, and I think any good strong colony would in a good honey season, fill them all in the same time that they would fill two or three boxes holding ten or a dozen pounds each.

In using frames of full size for surplus honey last summer, I had the same experience that Mr. McMullin relates. The bees built from the bottom upwards. I have since been told by an experienced bee-keeper that the bees would have begun at the tops of the frames, if I had given them one full sheet of comb to climb up on. I have no doubt this is correct, and shall try it next summer. I do not care to have much surplus honey in this form, as it is not so saleable. Bees seem to dislike to store honey so far from home as nine or ten inches from the top of their hive. I once made a large cap for a box hive, the whole size of the hive ten inches high with glass sides, putting a post in the centre for the bees to climb up on. I watched them attentively many days. They came up at last, increasing in numbers every day, gradually covering the bottom of the box, a few exploring the top. One day they were clustered an inch or two up the post, spreading out gracefully from all sides of the post to the bottom of the box. The next day they were up a little higher, and so on up to six or seven inches, my expectations rising with the bees. But there they stopped climbing, and after a few days more, swarmed without depositing a particle of honey. I concluded it was a poor honey season, and had not then learned to use old comb as an inducement for bees to begin.

Some of the ideas above have been advanced before, but they seem to be important enough to bear repetition. R. Bickford.

Seneca Falls, N. Y., January, 1868.

[For the American Bee Journal.]

Wintering Bees.

Mr. Editor.—Soon after I commenced keeping bees, I used the Weeks or Vermont hive. When I used a patent hive those days I followed the directions. I was to have the bottom board suspended at least one inch below the bottom for wintering; I soon found that that plan did not work satisfactorily. I had a neighbor who used the common box hive; he had a two inch hole in the top which he left open all winter; the hives setting on the top of hemlock stumps without any protection, summer or winter, except something to keep the rain out and snow from beating into the top of the hive. He plastered up tight all around the bottom of the hive for winter. His bees wintered well, and would every season swarm from two to three weeks earlier than mine; scarcely any of them would come out on the snow until the weather was warm enough for them to get back into the hive.

Since then I have observed that whenever I have found a swarm in the woods where the hollow was below the entrance, the comb was always bright and clean, and the bees were always in the best condition; no dead bees in the bottom of the log; and on the contrary when I have found a tree where the entrance was below the hollow, there was always more or less mouldy comb, dead bees, &c.

Again, if you see a box hive with a crack in it from top to bottom large enough to put your fingers in, the bees are all right in nine cases out of ten. The conclusion that I have come to is this, that with upward ventilation without any current of air from the bottom of the hive, your bees will winter well without any cobs.

Your cobs might be used on the top of the chimney, to keep the moisture from the fire from escaping into the air, with just as much sense, but some patent right man or company has recommended corn cobs, fine hay, chopped straw, &c. So people must pay five or ten dollars for the right to be humbugged, and the more complication and the more humbug there is about a hive, the better the thing sells among the inexperienced; and as a general rule the agent is as ignorant as those he sells to. A glass or pane of glass fixed over the ventilator to condense the moisture arising from the bees, is of the same stripe as the corn cobs. What I would recommend is this, that your corn cob advocate have a bundle of corn cobs fixed over his mouth and nose, to condense the breath instead of letting it escape into the air. There would be just as much sense in it, in my estimation. The old theory that you must have a witch pot hanging in the chimney, ought to be exploded, along with the idea that there is a great mystery about bee-keeping.

Enough on this head at present.

OSAGE, IOWA. ELISHA GALLUP.

[For the American Bee Journal.]

Numerical Force of Stocks.

PLEASANT HILL, KY.

MR. EDITOR:—I have chanced to meet with a portion of a discussion that has been so ably conducted in the *Country Gentleman*, between our two very worthy friends respecting the comparative value of swarming and non-swarming hives. Both are honorable and experienced apiarians, and have presented the claims of their favorite plans with tact and ability. But there is one point which to me is an important one, that so far as I have observed, has been entirely overlooked, and that is the relative value of the respective numerical force of the different forms of hives; though as I have not been favored with a perusal of the entire discussion it it may have undergone investigation and not reached my eye; if not, I would be pleased to see it discussed in the JOURNAL. If a section or plantation will only produce forage enough for fifty stocks in ordinary swarming hives, containing two thousand cubic inches, the same number of non-swarmers would probably contain treble the numerical force, overstock the place and not be able to obtain more than their own support, leaving no surplus for their owner. Now the question arises whether the proper numerical force would prove most remunerative with the least expense of fixtures and attention in fifteen or eighteen of these, or of fifty of those. And, also, which form would produce the best results at the least expense, with an equal numerical force and unlimited resources. If experiments have satisfactorily demonstrated the superiority of either plan in a numerical point of view, I for one would take it as a special favor to see the results stated in your valuable journal. If bees were in demand in the market and including the renewal of the queens in the swarmers, they would doubtless prove the most profitable. Yet the non-swarmers might be supplied with prolific queens by rearing them on the nucleus plan.

B. B. D.

[For the American Bee Journal.]

A Singular Occurrence and a Query.

In the autumn of 1860, on visiting a small apiary which I had established several miles from home, I found one large hive containing about a *pint* of bees, and from seventy to eighty pounds of honey and pollen. It was a young swarm, and the only remarkable thing was the hive contained beautiful white comb nearly all worker size, *but there had not been a worker or drone reared in the hive.* I have never known a similar case in twenty years' experience. I therefore wish to record it as something out of the usual course of bee-economy.

I desire, also, to inquire in what condition was the queen of said swarm during the amassing of such abundant stores. The friend having charge of them could not tell whether they were accompanied by a fertile or virgin queen, or whether two or more swarms had not united. That they had had a queen was evident from the kind of comb constructed; but she was not found when the disconsolate remnant of a once powerful swarm was dislodged from the hive. The combs were removed and fitted into frames and given to other swarms and stocks, and were not considered the less valuable for having a large amount of pollen. W. J. DAVIS.

YOUNGSVILLE, PA., January, 1868.

For the American Bee Journal.

Italian Bees and Red Clover Honey.

Three hundred pounds of honey stored in boxes by strong stocks of Italian bees, as there were at work at different times a bee to every four feet of surface, and no other flowers in bloom at the time to yield a surplus for storing.

There must have been large quantities stored in the hives during the yield, as the honey was noticed by several bee-keepers in handling the frames of their hives. The honey had the taste of raisins. Its color was nearly white or slightly shaded with pink. The season the driest of the last twenty. White clover dried up in time to allow basswood or linden honey to be stored in boxes by itself. The number of stocks at work within the radius of one mile was four hundred and fifty. J. M. MARVIN.

ST. CHARLES, ILL.

[For the American Bee Journal.]

WEST GEORGIA, VT.

MR. EDITOR:—I have certainly obtained more valuable information from a few numbers of the BEE JOURNAL than from twenty-five years' experience with bees, bee-rooms, dividing-hives, and such nonsense. Now, I propose to avail myself of the generously proffered experience of scientific men, who have better ability and opportunity than have fallen to my lot. I have built a bee-house of cedar plank in a hill side: it is eight by twelve feet, and eight feet inside at the upper or highest point. The roof descends to the north and is just above the turf, and is lined with boards and filled with six inches of sawdust. While the cold has been from 10 to 28 degrees below zero for ten successive days in the open air, it has not frozen in the bee-house.

My "Langstroth" frames are about eight inches deep. Is it necessary to cut winter passages through the combs, or is it warm enough there to enable them to reach all the honey?

The new cedar walls and posts render the air very offensive to me when in the room, and the honey must partake of the flavor, for hen's eggs packed in cedar sawdust were spoiled in two days. Is this odor or taste disagreeable or unhealthy to the bees? Are wild bees sometimes found in cedar trees? The house will contain thirty swarms. It now has nine. How large should the ventilators be, and how constructed?

Last spring my bees were nearly destitute of honey. I transferred them into the Langstroth hive. I did not know then how to cut down the comb to advantage, and did not get in all my frames; thinking the honey-board a disadvantage, I left it out and used frames above and below, which enabled me to feed forced, late, or light colonies with surplus honey conveniently and safely. There was, however, one difficulty. The bees continued their combs upward from the lower frames, instead of down from the guide combs above. The objections to the honey-board are its thickness, which makes more climbing for the bees, and its tendency to reduce the communication, and therefore the temperature in the drawers is too low for the bees to work their wax to advantage, if at all.

Now, with a view of obviating this objection, I propose to use honey-boards made of slats three-sixteenths of an inch thick and one and a half inches wide, with each end inserted in pieces of wood, like the sides of the slat frames; the slats to be half an inch apart, for the free admission of the bees and warm air from below. The openings are crosswise as usual.

For convenience, I design to use common frames adapted to the lower part of the hives, until I have increased my colonies sufficiently; then, if they prosper, dispense with the frames and use drawers (for market) with slat bottoms to correspond with the honey-board, unless frames are saleable or portable in some form. Now what departure from the above course would your experience advise?

I have in my care a large and productive colony that had not killed all their drones, up to the last fair day in November. Is this a positive evidence that they are queenless? They are in a log hive and cannot be examined.

These questions may have all been answered in the JOURNAL; if so, I am ignorant, and so I presume are many others. ' A. NOVICE.

[For the American Bee Journal.]

Experience in Wintering Bees in the Open Air.

EDITOR BEE JOURNAL:—Wintering bees is one of the greatest perplexities the apiarian has to contend with. I prefer to have my bees remain on their summer stands, enclosed with a tight board fence about five feet high, with the hive setting near the ground. I use frame hives, and have no trouble to winter bees in them successfully, by removing the honey-board just before winter sets in, and taking out one or more frames, setting these away in an empty hive until the cold weather is over and then replacing them. The frames in the hive are now moved further apart, which gives the bees a good chance to protect themselves from the cold. To confine the heat and absorb the moisture, straw cut to a suitable length is placed on the top of the frames. Some of your readers might perhaps say that bees would get out of honey in cold weather, if clustered between three or four ranges of comb. This might be the case in hives that are very wide. Such hives are not fit to winter bees in, as they cannot go through the combs in cold weather to get at their honey, even if winter passages are used. I have had bees in broad frame hives with winter passages in the combs, each frame had also a cross piece through the centre, which gave more room still for the bees to pass through. Yet they died with honey in their hives. Still, these passages should not be neglected.

My hives are narrow which makes the frames of medium depth and long, so the bees can pass up from front to rear in the coldest weather; thus giving them access to at least twenty pounds of honey. These frames are not quite so convenient to handle as shallow frames; but I have no trouble in doing it. A board placed loosely in the side of all frame hives, which can be drawn out, thus leaving a vacant space, will much facilitate the removal of the frames. Frequent handling the frames and disturbing the bees as much as some do, is wrong, and will always prove more or less injurious.

EAST SPRINGFIELD, PA. C. GERE.

[For the American Bee Journal.]

TERRE HAUTE, IND., Dec.-30, 1867.

MR. EDITOR:—Will you or some of your correspondents who know, or think they know, be so good as to state what is the best thickness for lumber of which to make bee hives, when they are to stand out of doors all the time, say in latitude about 40 degress?

Also, please state whether it would be advisable to cut out the drone comb or a portion of it to prevent the raising of too many drones. If cut out, would the bees be most likely to fill the space with drone or worker comb?

A. DUNLAP.

Correspondence of the Bee Journal.

LYNN, (MASS.,) Dec. 31, 1867.

I am a beginner in the bee business and wish to get practical and scientific knowledge to assist me in the management of my bees, without which I should doubtless fail to realize success.

I have read the works of Langstroth, Quinby, and others, which I like very much, and would not be without them for any consideration. Still I consider no bee-keeper fully armed and equipped for apiarian science, without the aid of your valuable Journal. A periodical of this kind is just what is needed to encourage and promote so useful and interesting a branch of rural economy as bee culture; and I trust it will be sustained and continued so long as apiarians make money and bees make honey.

P. R. RUSSELL.

NEW CUMBERLAND, (WEST VA.)

I have eighty-seven stands of bees, two of them Italian. I intend to give the most of them Italian queens next summer.

I have a good location for bees, plenty of forest and locust trees, with lots of white clover; and have had good success heretofore by good management. I hope your Journal may enable me to add a few pounds more to the product of each hive, which will make a nice thing for me.

Yours respectfully,
ALFRED CHAPMAN.

MANCHESTER, (N. H.,) Dec. 24, 1867.

I received the specimen numbers of the AMERICAN BEE JOURNAL, and like them very much. Inclosed please find two dollars ($2) for one years' subscription.

IRVING M. CORNING.

COLEBROOK, (N. H.,) Dec. 20, 1867.

I enclose one dollar, ($1). Please continue sending the BEE JOURNAL. I cannot do without it, so long as it is so interesting and Novice writes his experience in bee-keeping.

Could we not have an article on bee-hunting this winter, while business is dull? There are a great many wild bees in the woods that might be looked up, if we only knew how.

WILLIAM C. MERRILL.

LATTNER'S, DUBUQUE CO., (IOWA.)

Inclosed you will find two dollars for the BEE JOURNAL. I find it just the thing every man ought to have who keeps a colony of bees. To its columns I mainly attribute my success with bees this season. I find the Italians far superior to the black bees, and as I wish to Italianize all my colonies next season, give us all the hints you can in that direction. I will give you a little of my experience.

I received a queen from Mr. Langstroth late in the season, I think the latter part of August. The queen I put in a queenless colony, which had no brood of any kind. I left her one day in the queen cage. The next day I let her run out, and she was well received. Three days afterwards I found eggs in the cells of the middle comb. I then changed stocks with a very strong colony, and every evening gave them about two tablespoonsful of honey in the upper box or super. When I noticed the black bees commenced killing their drones, I examined my Italians again, which was about the first week in September. All the combs, except the two outside ones, were supplied with eggs and brood, and I observed that all the drone cells were full of brood. I then took out my queen and put her in a weak colony, which I had previously made queenless. In about nine days afterwards I examined the colony again, and found not less than ten queen cells capped over. I cut all out but two, and put them into other swarms which I had also made queenless. All, save three, destroyed the cell I introduced and built no others. It was well I had saved the old queens. My young queens hatched, and now I could not find a black drone remaining, and not more than a few hundred Italians which were all in one hive. In about eight days I noticed that war was made on them; and when I examined the hive I found fresh eggs laid in the two middle combs. Of my other young queens only one has laid eggs up to this time. Wonder, will they commence laying next spring?

I think of pushing the Italians early in the spring, and raising queens as early as they commence laying drone eggs and pure Italians can be raised. I shall give it a trial. I do not like the half breeds. They are too cross for me, and I believe will rob others sooner than gather honey from flowers. I found two of my hives attacked exclusively by that kind.

PAUL LATTNER.

GARDINER, (ME.,) Dec. 14, 1867.

The past season has been a very good one for honey, though producing few swarms. I have taken 596 pounds of honey from seven hives of black bees. My practice has been to feed sparingly in the spring to promote brooding. I use Kidder's double hive. I have transferred black bees and introduced the Italian queen at the time of transfer, with perfect success.

Yours truly, GEORGE W. BLANCHARD.

SARDINIA, OHIO, Jan. 15, 1868.

Enclosed I send you two dollars for the "BEE JOURNAL," one year, commencing if you like with No. 1, Vol. 3. I received a sample number last autumn, and like the paper very well. The enterprise should by all means be sustained.

C. B. MOORE.

OTTAWA, ILL., Dec. 28, 1867.

Please send me your BEE JOURNAL for one year. I enclose the price, $2. I like the paper very much.

BALDWIN CITY, KANSAS, Jan. 17, 1868.

I have received a copy of the AMERICAN BEE JOURNAL and am well pleased with it. I enclose one dollar. Send me the paper.

Strawberries, when in blossom, are visited by bees rather for pollen than for honey, of which latter they produce comparatively little. The pellets of pollen are brownish or cinnamon-colored.

THE AMERICAN BEE JOURNAL.

WASHINGTON, FEBRUARY, 1868.

☞ THE AMERICAN BEE JOURNAL is now published monthly, in the City of Washington, (D. C.,) at $2 per annum. All communications should be addressed to the Editor, at that place.

☞ Though we have given up nearly all our space in this number to our correspondents, we have still a large supply of communications on hand unused, which shall have early attention. There is manifestly a rapidly growing interest in bee culture being developed in almost all sections of the country. We trust it may conduce to a corresponding increase of our subscription list, so that the BEE JOURNAL may be adequately and permanently sustained. We should have not only correspondents, but subscribers also, in every town or township in the Union.

☞ We greatly regret to state that a return of the disease with which he has been for many years sorely afflicted, will prevent Mr. Langstroth, for the present, from furnishing our readers with the account of his experiments in wintering bees in the open air, which his article on that subject, given the last number of the BEE JOURNAL, led us to expect.

NEW PUBLICATIONS.

We have received from the author, D. L. Adair, of Hawesville, (Ky.), a copy of his "*New System of Bee-keeping, adapted to the habits and characteristics of the Honey Bee, with descriptions of and directions for managing bees in the Section Hive.*" From the cursory examination we have been able to give it, it appears to contain, under distinct heads, much information serviceable to beginners in practical beeculture; but we have not had leisure to examine the "new system," or acquaint ourselves with the peculiarities of the "section hive." Mr. Adair is known to our readers as a contributor to the BEE JOURNAL. *See advertisement.*

A copy of the "*Illustrated Annual Register of Rural Affairs for* 1868," has been sent to us by the publishers, Luther Tucker & Son, of the "*Country Gentleman*," Albany, N. Y. It contains a large number and great variety of amply illustrated articles, interesting and useful to Farmers, Fruit Growers, Gardeners, and Housekeepers in general. This annual has now been published fourteen years. A complete set would be a valuable addition to any farmer's library.

We have, also, received from the Prairie Farmer Company, Chicago, Ill., a copy of the "*Prairie Farmer Annual for* 1868," being the first of an intended Western series of this class of publications. It is well printed, handsomely illustrated, and presents some new features—such as the Agricultural and Horticultural Directory—which enhance its value.

[For the American Bee Journal.]

Patent Hives.

MR. EDITOR:—I suppose that as I am not selling queens, or in the patent hive business, I have a right to say what I choose about patent hives, &c. To begin, we have the Lee hive, the Langstroth, the American, the Kidder, the Flanders, &c., &c. Each agent says that his is the best. The Lee agent is selling rights at five dollars, with every part of the patent left out. But people must be humbugged; so I suppose he thinks he must do his share. The Langstroth agent has not been in the business for quite a while Why Mr. Langstroth does not furnish his agents with some other form of hive, besides the broad shallow things that I have seen, is more than I can understand. He certainly ought to know by this time that they are good for nothing in the hands of most bee-keepers. I have examined any quantity of those hives, and I never yet found a single colony with the combs built right; and moths by the thousand in them. The American or King hive has its slanting bottom board, which is out of date years ago; the nucleus swarming apparatus, which takes three or four days to perform what any person ought to perform in fifteen minutes; and then the frames fixed permanently at equal distances—a very bad feature in any hive, thrown aside by practical bee-keepers years ago; and then a cross bar in the centre of each frame, occupying space that ought to be occupied by brood in the breeding season. The Kidder hive, too expensive altogether, with fixtures about it that are of no earthly use whatever. The Flanders hive is of the same stripe.

I give Mr. Langstroth the credit of introducing the movable comb hive, and he ought to be paid for it.

What I want to tell new beginners is this—you want a cheap, simple, movable comb hive. (If any one is entitled to pay for using the frames, it is Mr. Langstroth.) One and a half inches from centre to centre of the frames, is the right distance for the Italians. Black bees will allow the frames a little closer. Let all the other hive men whistle. Don't give them your money for nothing. This advice will cost you nothing. Of course those who have got bit will hate to own it; but that neither makes it true or false.

The reason why I write articles on the bee question is because my particular knowledge on said question ought to be worth something to the inexperienced towards helping them along; and I presume the editor is so posted that any article that is not of some use he will not insert in the JOURNAL. I certainly shall not be offended if any of my articles are rejected.

By the way, we have had a Bee Keepers' Convention in this State, and their discussion was about corn cobs. At a future time, I may have something to say on that corn cob question.

Osage, (Iowa). Elisha Gallup.

[For the American Bee Journal.]

Two Fertile Queens in one Hive.

In attempting to introduce the first Italian queen in my possession, I accidentally deprived her of one of her smaller wings. This was pulled out of its root in the effort to save her from enraged bees. At the time the loss of the queen was feared, but beyond expectation, she was afterwards well received and became very prolific. But during her life, which was about two years, the bees would continually construct queen cells, apparently to supersede her. By the way, this was very important to me. I could obtain all the queen cells I wanted, and also have them nearly matured in a full stock, which to some breeders seems to be of so much importance. But to return: this queen was removed the second year to a distant apiary. Some time in the fall I wished to use her at home. Imagine my surprise when, on examining the colony she was in, I found it to consist of nearly one-half hybrids. Opening the hive, I found the same original queen, about which I could not be mistaken. But where the hybrids came from was, at the time, a mystery to me, for I never dreamed of two queens being in a hive. A closer examination, however, revealed another large but darker queen. These queens were then put in different hives where each continued to lay during the fall, but the old queen was missing next spring.

New Berlin, Pa. R. B. Oldt.

[For the American Bee Journal.]

Voluntary Contractility of the Queen Bee at Oviposition.

Mr. Editor:—In Bee Journal No. 6, Vol. 3, on page 115, there appears an article under the above caption by Prof. Varro, in which, if I read aright, he claims to have inserted the "wanting link" in the Dzierzon theory, viz: that when the queen lays in a drone cell the spermatheca is closed by voluntary contraction, and the egg is allowed to pass without receiving any of the seminal fluid. He also claims that by the insertion of this link, we can account for the origin and multiform appearance of the *fragmental dash* of impurity in Italian bees, without my theory of absorption and circulation.

Still further on in his article, he says: "Mr. Thomas, in my opinion, reasons very cogently. I congratulate him on what he has advanced, and if the stubborn facts above alluded to can be rocked to sleep, and the positiveness of his conclusions thus be converted into truths, I shall be ready to accept and acknowledge them of course."

Either through the ambiguity of the Professor's language or my stupidity, I am unable to clearly understand the facts alluded to, or see any connection between them and the inserted link. I will, therefore, neither attempt to defend my own theory nor rock to sleep his "stubborn facts," until I better understand those facts. Will the Professor express, if possible, so that I can understand it, how by the inserted link "we may account for the origin and multiform appearance of the fragmental dash of impurity in Italian bees?" Also, what he means by the remark that "some black bees, there as well as here and elsewhere, do make at times their appearance simultaneously with three banded, two banded, and one banded bees in one and the same hive."

I would, however, say that Prof. Varro must be mistaken in supposing that the link was wanting in the Dzierzon theory, until he wrote his article, for it had been inserted several years since by myself, if not by others; appearing as early as 1865 in a small hand-book on bee culture, written by myself, and called the "Canadian Bee Keepers' Guide." It may be found on page 18, and reads thus: "My own opinion is, that she (the queen) has the power and instinctively *closes the mouth of the sac* when laying in drone cells."

With regard to "impeccability of temper," the Professor says, "that in Europe his test constitute the rule and not the exception." Suppose we admit it, admit that pure Italian bees possess impeccability of thimper, what is gained by it as a test of purity?

Nothing at all. For I affirm that no stock of Italian bees will possess impeccability of temper that does not show three distinct yellow bands. Such being the case the purity of Italian bees is susceptible of ocular demonstration; hence no further test is required. Seeing the bands would be proof of their sinless disposition. But I am not prepared to admit that Italian bees are so indisposed to sting as Prof. Varro would make it appear. However, as I desire to know the truth, I shall be happy to accept the friendly offer to call and see in person and examine the Professor's pure Italians the first opportunity that offers; but without the least expectation of bringing away anything more of a sinless "Italian fly" than its sting; J. H. Thomas.

Brooklyn, Ontario, Canada.

[For the American Bee Journal.]

Reply to "More Seeming Puzzles."

The instance related by Elisha Gallup in volume 3, page 112, in which two queens were found in one hive during the winter, is as much the exception and not the rule as any case could be. First, it is a hollow log and not a hive.

Now there would be no difficulty in accounting for two queens in one "hollow log," provided the log was long enough; and it would not require to be very long either, if the hollow was properly constructed, for not only two queens but even two colonies to remain in it for any length of time, in perfect harmony, with the fact that two queens are not allowed in one hive or colony. For it will be understood that even in a large box or hive, so constructed, that there are two apartments with an auger hole passage from one to the other, two queens will live without quarreling.

In such a case, however, each apartment is a hive, and as really so as if they were separated six feet apart. Now, hollows in trees are so formed that two colonies may exist in very close proximity to one another, so much so as to appear as one colony, when taken up by a careless observer. But I do not feel disposed to account for the two queens in the instance related by friend Gallup upon the ground of there being two colonies in his log, although he did not give the length. I would account for the two queens in this way. The old queen was becoming unfertile, and the workers either from learning the fact or instinctively knowing it, set to work and developed another queen.

True to their nature, a portion of the bees guarded the old queen, who being unable to fly, still remained in the hive or log, and if the guard did not forsake her, would have done so until she died. The young and fertile queen, however, would be the real queen of the colony, the old and unfertile queen having been turned off to die, by all the workers save a few who, out of a natural respect for old age, kindly fed and nursed her for a brief time, till the life lamp expired. Who, however, on account of such an exception, is authorized to say that two queens are allowed in one colony? Nor does it appear strange when understood. J. H. Thomas.

Brooklyn, Ontario.

[For the American Bee Journal.]

Italianizing Black Bees in Box Hives.

As my method of doing this is different from all those practiced by others, which I have become acquainted with, I take the liberty of communicating it.

A week or so before swarming time, I drum out what is called a forced swarm, set it in place of the old stock, and remove the latter to a new place. I then insert the cage containing the Italian queen between two brood combs, and liberate her on the evening of the third day.

I have introduced a great number of queens in box hives, in this way, without losing a single one.

The case is very different if a queen is to be introduced late in the season, when there is no honey to be gathered. Then it is necessary to wait from twelve to twenty-four hours, after removing the black queen, before the Italian can be put in caged; and she should not be liberated in less than a week.

Bees will sometimes receive a stranger queen, uncaged, twenty-four hours after losing their queen; and sometimes they will not receive her in less than a week. During a good yield of honey it is not at all difficult to introduce queens. They may then be inserted, caged, the moment the other queen is removed, and liberated in forty-eight or seventy-two hours, both in box hives and movable frame hives, and scarcely ever will a queen be killed. But experience has taught me that this cannot be done in October.

Jefferson, (Wis.) A. Grimm.

[For the American Bee Journal.]

The Italian Bees and Red Clover.

Mr. Editor:—I have been a reader of the Bee Journal only for the last six months, but have become quite interested in its contents, and propose, with your permission, to add my mite.

One year ago last July, I procured from Mr. Langstroth an Italian queen, and started last spring with eight stocks, all in the Langstroth hive. Seven of these were hybrids, and the other contained the Langstroth queen. These bees have done better for me, thus far, than the black bees ever did. I have now sixteen good colonies, and took during the summer over three hundred (300) pounds of cap honey, besides nearly one hundred pounds in racks. Most of the latter I may have to return in early spring. I will mention in particular one of my stocks. I divided it on the 1st of June, gave to each half a rack or two of empty comb, and in a few days to the queenless half a mature queen. These two hives yielded just one hundred pounds of box honey, and are both in good case for winter.

I have to-day received the January number of the Bee Journal, and will deviate somewhat from the course marked out in my own mind when I began to pen this article, in order to be a witness to "Victim" and others in regard to the ability of these bees to work on red clover. I flatter myself that, in some respects, my evidence will go further with these brethren than even that of Mr. Langstroth. I have been a minister of the gospel for the last twenty years, and the settled pastor of the congregation in which I now live for the last nineteen years. My people being mostly farmers, and my imperfect health requiring me to live much in the open air, I have given considerable attention to gardening, fruit culture, and bee keeping—all for my own comfort and that of my family.

I reared four young Italian queens this summer for neighbors, at their especial request, and have no idea, while I have ability to preach, of going into the bee business. Both the red and the white clover abound in this region. I cannot now remember of having ever seen more than two or three black bees alight on the former. Of course I will be understood as having only the experience of one summer. But during the first bloom of red clover, and when white clover was also in bloom, I have very frequently taken my friends out to my clover lot to see for themselves; and on equal spaces of ground could almost at any time count as many bees on the red as on the white clover. This was surprising to me, because Mr. Langstroth only claims for them that they will work freely on the second crop. Here, I confess, they did not fully come up to my expectations. From the great abundance of red clover in this region, and the large fields convenient to my bees being kept up for seed, I expected that the bees would fill their honey boxes from it. But, though busy all the time on it and other fall flowers, I could not induce them to store honey above. Satisfied that they could spare some from below, quite late in the season, and as it proved too late for profit, I opened a number of hives and took one rack of sealed honey from each, inserting an empty rack in the centre. I find, on opening these hives, that the bees have filled these racks with comb, only in part, in nearly every case—leaving an empty space in the centre of the hive, which might in very cold weather endanger the life of the colony. Had it been done early in the season, I think I would have succeeded better. I am satisfied, however, that in a region of country like this, where there is no buckwheat, the ability of the Italian bee to get honey from the red clover will prove a great advantage.

During the latter part of the summer and fall until frost, the Italian bees had something to do, and the result is almost, in every case, well stored combs. The first time I ever knew them to engage in robbing was after the frost had killed the flowers. Their reputation since then, in the opinion of some of my neighbors, is not the best in this respect. JAMES G. RANKIN.

BARINGTON, WASH. CO., PA.

[For the American Bee Journal.]

Good Success with Italian Bees.

J. D. Clapp, Esq., President of the National Bank of Fort Atkinson, (Wis.,) had a Italian queen introduced in one of his three colonies of black bees, on the 3d of August, 1865. In about six weeks almost all the black bees had disappeared. He wintered his three colonies in a cellar, but lost the two black ones. He had a swarm in the first week in June, 1866, and ten days later a second swarm. The two swarms and the old stock filled their hives and stored fifty pounds of surplus honey in boxes. All three remained pure and wintered well. One of them swarmed on the 28th of May, 1867, another the first week in June, and the third about a week later. One of them gave a second swarm. The swarm of May 28th filled its hive, and then two twenty pound boxes with surplus honey; then gave a maiden swarm that filled its hive and stored ten pounds in a surplus box; while the stock from which it came, filled another twenty pound box with honey. Mr. Clapp obtained in all a little over three hundred pounds of box honey from the three old stocks and five swarms. Three stocks proved to be hybrids; but five are as pure yet as the original one. Mr. Clapp told me that this was the best success he had in twenty-three years bee-keeping; and that his neighbors did not get near as much surplus honey as he did. As Mr. Clapp is a reader of the BEE JOURNAL, I wish him to correct this statement if I have in any respect reported incorrectly. A. GRIMM.

JEFFERSON, (WIS.)

[For the American Bee Journal.]

Italian Bees and Red Clover.

I have had Italian bees for about five years. I lived in Illinois two years, and had three acres of red clover adjoining my bee stand. I have now been living in Indiana nearly three years, and have about twelve acres of red clover. Not one single Italian bee, out of forty stands, could I ever find on the *second* blossom of red clover, and I have watched closely. Nor did ever know any honey come in at the time when the second crop of clover was in bloom. I have had dry and wet seasons, so that I am well convinced they do not work on it. I have always found black and Italian bees on the *first* blossom, but only a few. This comes at the same time when white clove blossoms. If red clover were sown in the spring and the first blossom would come in August, perhaps they might work on it, and thus explain why bees were seen on August clover.

I had bees creeping in my ear last year under my veil. I would, therefore, advise putting cotton in before commencing operations.

T. HULMAN, JR.

[For the American Bee Journal.]

Can Italian Bees be Raised and Kept Pure in a Location Where Black Bees are Abundant?

On the 3d of October last, it was three years since I received my first pure Italian queens from the Rev. L. L. Langstroth. At that time there were here, in a circuit of four miles, about three hundred colonies of black bees--my own included. At present, there are on the same area, forty-eight black colonies, sixty-two hybrids, and four hundred and seven pure Italian stocks, including my own in my home apiary. All the queens for these colonies, and two hundred kept in my northern apiary, besides a large number of extra queens sold, (I cannot state the precise number), were bred from the original queen, and two others procured in September two years ago. The progeny of the queens raised by me and now in my apiaries, is of a brighter color than the progeny of the originally purchased queens; and I think this proves that the Italian bee does not run out in this country, if prevented from hybridizing. I have raised queens in the seventh generation, and the last generation is more beautiful than the original stock was. Does not this show that the Italian bees can be raised and kept pure in any location outside of an island twelve miles from shore, or on a mountain where black bees do not fly? I write these lines as an answer to Mr. Hoxie's letter on pages 79 and 80 of the present volume of the BEE JOURNAL. A. GRIMM.

JEFFERSON, (WIS.)

Maple Trees.

The various species of maples are of great importance in bee culture, yielding pollen and honey abundantly. The Norway maple (*Acer platanoides*) which has been extensively introduced within the last twenty years, as an ornamental shade tree, should be specially cherished by bee-keepers, as coming into bloom early in April, and in southerly situations even in March. Its foliage is remarkably fine and abundant, and it retains its verdure longer than most other species. It is likewise less subject to the ravages of insects, as its milky juice is said to be distasteful to them.

AMERICAN BEE JOURNAL.

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[From the Bienenzeitung.]

Foulbrood.

[CONCLUDED FROM LAST NUMBER.]

§ 6.

HOW DOES FOULBROOD ORIGINATE?

This question is still involved in the utmost obscurity, and the opinions of bee-keepers differ greatly. My own conviction is that it arises from causes as various as the phenomena it presents and the character it assumes. I can hence do little more now than restate briefly the views entertained of it by prominent writers on bee culture.

FIRST VIEW.—It is believed by some that a minute black fly, the *Phora incrassata*, enters the hive and deposites its eggs in the brood, selecting as the nidus only the uncapped but most advanced larvæ, and depositing in each only a single egg. The phora larva hatched from this egg, parasitically consumes the viscera of the bee-larva which it inhabits, just as the larva of the ichneumon fly lives on or in the common cabbage caterpillar. Maturing in the couse of five days, it then leaves the carcase of the bee-larva by an opening visible by the naked eye, and perforating the cap of the cell, falls to the bottom of the hive, and either spins its cocoon among the droppings found there, or passes out to undergo its further metamorphoses in the earth. So long as phora larva inhabits the bee-larva, the latter, according to Dr. Donhoff, remains alive, but finally dies in consequence of the abstraction of its internal fatty substance by its parasitic foe. Decomposition thus virtually begins already while the larva is still living, though running into putrescence only after death.

Dr. Asmusz alleges that he found many phora larvæ in the larvæ of bees, and says that to see them it is only necessary to decapitate a bee-larva in which the first symptoms of foulbrood are exhibited and carefully press out the juices of the body. By repeating this process several times, the operator can hardly fail to detect one or more phora larvæ. Or if the body of a bee-larva be held before the light of a candle in a darkened chamber, the motions of the contained parasitic larva will be plainly perceptible. But, according to Dr. Asmusz, phora larvæ are not found in all bee-larvæ, but only in comparatively the smaller number. Yet, by the miasm diffused in the hive by the putrid larvæ, others not thus parasitically infected, also become infected, die, and putrify. Thus, while a portion only of the brood perishes, and another portion developes in health, the case is analogous only to what occurs in other pestilential diseases, such as peripneumonia, rinderpest, &c., whereof of animals similarly exposed, some are infected, while others escape, owing perhaps to a peculiar habit of body at the time. The like is often observed when contagious diseases, such as pestilence, cholera, typhus, scarletina, &c., to which the human system is subject, prevails: numbers are stricken down, while others remain unattacked, even in the most infected districts. This is the view of Dr. Asmusz, as presented in his treatise on the parasites of the honey bee; and it must be admitted that the phora, as figured on his plates, has a decidedly mephistophelian appearance and expression.

Against this view it may be urged—

First. That the *phora incrassata* abounds everywhere, and is bred in every hive containing dead bees. Yet there are numerous districts totally exempt from foulbrood. This, as Mr. Kleine remarks, could not be the case, if such were its origin—for the same cause should, in like circumstances, produce the same effect, if nature designed that the phora should lay its eggs in the larvæ of the honey bee.

Secondly. The *phora incrassata* does not lay its eggs in *living*, but only in *dead* organisms.

Thirdly, If, as Dr. Asmusz seems to have found by microscopic examinations, the *phora incrassata* does, in exceptional cases, lay its eggs in bee larvæ, it would be in the highest degree singular that the result should be the putrid decomposition of such larvæ—a result never produced in other analogous cases. And why do only larvæ thus destroyed by the phora diffuse a putrid miasm, such as is not diffused by decomposing larvæ which have died from some other cause.

Fourthly, If Dr. Asmusz's views were correct—the pupæ of *phora incrassata* would be as numerous in foulbroody hives as in other hives containing dead bees in which the phora had laid its eggs. This, however, is not so.

Fifthly, Parasites do indeed prove destructive to insects designed by nature to be their prey, but must never be assumed to become the cause of the destruction of the entire race—which would, in effect, be warring against their own kith and kin.

Sixthly, I have examined nearly a hundred bee larvæ, "by holding them before the light of a candle in a darkened chamber," but could never detect the motions of a single phora larva.

Seventhly, Prof. Leuckart examined microscopically a great number of foulbroody bee larvæ in the summer of 1860. Some were dead and some still living. He found neither phora larvæ nor any other animal parasite in any of them.

Notwithstanding all this, it is my impression that foulbrood of the first and second grade or form, is at least occasionally, and probably more frequently than we suppose, caused by some parasitic insect, even though it be not the *phora incrassata.*

In the first place Dr. Asmusz has ascertained the presence of animal parasites in still living bee larvæ from foulbroody hives; and as against clearly ascertained *facts*, I hold mere scientific inferential and negative proof as of small account.

Secondly, The minute holes observed in the caps of foulbroody cells, indicate that some living creature either there entered or came out of those cells. But of the fact that it *comes out* thence, I think I have conclusive evidence. In the summer of 1861, Mr. Henry Keil, a bee-keeper in Dottelstadt, near Gotha, brought to me a foulbroody comb from one of his hives. I examined it minutely, and observed small holes in the caps of *seven* of the cells. I then placed the comb under a glass cover, and on examining it again nine days after, found that the number of holes had increased to *twenty-four.* The additional seventeen, it is apparent, could only have been perforated from *within* and *outwards.* Nor could they have been produced, as Scholtiz supposed, by the bees, "in order to ascertain the contents of the cells after having in vain awaited the development of the larvæ."

Thirdly, This view of the matter accounts plainly for the spontaneous occurrence of foulbrood in places where no obvious cause is known to exist. It is probable that the insect makes its appearance only temporarily and in limited areas, though occurring in greater or less numbers at different periods. This, too, would account for the fact that at times one or two hives are attacked in an apiary where no vitiated or noxious honey has been fed—a circumstance otherwise inexplicable.

Second View.—Foulbrood may be caused by feeding the colonies with fermented or acidified honey. Fermentive matter, even though not derived wholly or in part from foulbroody stocks, would cause fermentation in the brood fed therewith and thus produce foulbrood. President Busch, however, states that he has often fed such honey without injury to his stocks. I have myself, in former years, fed tons of Cuban honey to my bees—honey having a nauseous, disagreeable taste and smell—with no bad effect whatever. But this is inconclusive. That which was in ten cases harmless, may prove destructive in the eleventh. I think the positive evidence here shows that fermented or acidified honey can produce foulbrood.

Mr. Kalteich states that "honey combs of the previous year emitted a fetid odor, their surface was damp, and the pollen mouldy. I gave these combs to three populous stocks, all of which became foulbroody and perished; as did likewise a fourth, the bees of which had appropriated some of this honey and several others also, into which I had introduced such combs before I knew they were contaminated."

Mr. Hermann says: "In two instances foulbrood was produced by feeding bees with honey kept in a vessel in which verdegris had been formed."

Mr. P. J. Mahan, a highly intelligent bee-keeper from Philadelphia, told me when here that he had formerly spent some time on the island of Cuba, and had observed that it was a common practice in the apiaries there after suffocating their bees, to press out the liquid from the commingled mass of honey, pollen, brood, and dead bees, and run it into casks as the product of the bee. This nauseous mixture speedily undergoes fermentation, especially if the combs were not previously heated and contained much young brood, the rich juices of which readily ferment. Foulbrood is sure to be produced when bees have access to such food; and he knew of many instances in the United States where the disease originated from this cause, *though it was almost unknown in Cuba.* The bee-keepers there are well aware of the noxious quality of such honey, and are careful that their bees shall not have access to it. So long as this commixture, called Cuban honey, has not undergone fermentation, it may be safely fed to bees; and its pestilential quality depends entirely upon the fact whether the pressing took place when there was much unsealed brood in the cells. Usually the pressing was done when the combs were free from brood, but occasionally the want of empty hives to accommodate the numerous swarms, constrained them to be less particular in that respect. Bee-keepers in the United States, taught by experience that Cuban honey was a dangerous kind of bee-feed, avoid it altogether, and would not accept it as a gift for that purpose. Thus far Mahan. Polish and other foreign honey of commerce, is of nearly the same character.

In corroboration of this view I quote also the observed fact that such honey does not directly, but only indirectly, produce foulbrood. It gradually contaminates the air in the hive, developing a fetid odor, and thus causing disease, which always breaks out six or eight weeks after the noxious honey has been fed. This is also confirmed by Dzierzon's experience, who made all his stock foulbroody in 1848, by feeding Cuban honey.

Third View.—It is believed by some that if brood which has died from any cause, is not removed by the bees, it will become putrid and produce a contagious disease; that is non-contagious foulbrood may under certain circumstances be come contagious. This, I conceive, is only too likely. In 1855, I discovered a highly fetid foulbroody hive in the apiary of Mr. Oscar Ziegler, in Schleusingen, which was forthwith condemned to the brimstone pit. Mr. Ziegler bought this hive in a neighboring village, and the bees were suffocated while it was being transported to his home. About eight days after a swarm was put in it, and thereupon the non-contagious foulbrood therein, immediately assumed the contagious form.

Fourth View.—The disese may be caused by noxious dews which sometimes occur while fruit trees are in blossom. This is a very old opinion. Hofler said in 1660, "In some years the blossoms of trees are literally poisoned by dews and mists, so as to make bees sick." In a conversation with Dzierzon, in 1855, while he was on a visit to Seebach, he said he was inclined to accept this view. "I think," said he, "I have frequently observed this in my neighborhood, while fruit trees were in blossom. Foulbrood may originate thus, though to these noxious dews is attributed the disease more commonly known as *vertigo*."

However, were such the case, would not all the stocks within a certain range or circuit, be simultaneously and similarly affected? Hoffman-Brand states that in his foulbroody hives the pollen was slimy and apparently undergoing a kind of fermentation; which he ascribed to the noxious qualities of the dew.

Fifth View.—The fungus called *mucor mellitophorus*, which is often found in the chyle stomach of bees, it is alleged exerts a deleterious influence on the preparation of the jelly, so that the brood is not furnished with a properly digested pabulum, and hence becomes diseased, dies and putrifies. The fungus is supposed to be thus the indirect cause of the disease. But, this fungus is often found abundantly in colonies entirely healthy; and Dr. Asmusz never found it in bees of foulbroody stocks.

In addition to all this, we find many other conjectures presented in bee-books and by correspondents of the *Bienenzeitung*, none of which seem to have any solid basis. Mr. Kritz supposed that foulbrood may be caused by some unhealthy effluvium emanating from the bee-keeper himself. Dr. Alefeld thinks it may arise from a diseased condition of the sexual organs of the queen-bee. Semlitsch imagines it may result from the dust blown into the hives from the streets and highways. And even the position assumed by Director Fisher in an article on "the origin, nature, and cause of foulbrood," published in the Transactions of the Third Meeting of German Agriculturists in 1865, is of no account, being manifestly based on erroneous premises.

In fine, I believe, as I have already stated, that foulbrood, as it presents various phenomena and assumes various forms or grades, so it may arise from various causes. At present, however, we posess no tangible knowledge respecting it. Bee-keepers should therefore be careful to ascertain and note the facts and circumstances, whenever the disease comes under their observation. Nor should they be in haste to form or proclaim theories. Above all, they should not neglect to submit foulbroody combs to the examination of some competent naturalist when practicable. I do not think it at all likely that inexperienced bee-keepers, unversed in physiology and unpracticed in the employment of the microscope, will ever advance us much in this direction unless aided by men professionally prepared to prosecute scientific investigations, to whom carefully observed facts would be invaluable. Only after ascertaining the true nature of the disease, may we hope perhaps to devise methods for its prevention and cure.

A. Von Berlepsch.

[For the American Bee Journal.]

Producing Fertile Workers.

I have been a reader of the American Bee Journal since the commencement of the second volume. As a whole, I am well pleased with it, and think it should be sustained by the bee-keepers throughout the United States. But there are sometimes positions taken, or theories advanced, to which I take exception. While there have been rapid advances made in apiarian science "in the latter days," is there not now much said and written in relation to bees, which is theory and theory only? We are very apt to "jump at conclusions." We sometimes find, in September or October, hives in which there are no bees, the combs destroyed and filled with vile worms and coccoons. In the spring the hive was populous, and has sent out during the summer one or two good swarms. If we knew nothing of the natural history of bees, we should at once attribute the loss of the colony to the ravages of the bee-moth, whereas, nine times in ten the destruction is really occasioned by the loss of the queen on her wedding excursion. The conclusion arrived at here would be very natural, but erroneous.

Are we not equally incorrect in some of our theories in relation to the natural history of bees? If a queen is removed from a colony, they will rear another from any egg or young larva found in the hive in worker comb, changing it from what would otherwise have produced an imperfect female or worker, to a perfect female or queen. If I understand Prof. Von Siebold correctly (see American Bee Journal for December, 1867), he claims that this change is effected either by the kind or the quantity of food consumed by the larva. Here is a position taken or a theory advanced; and founded thereon, or derived from this theory, whether correct or incorrect, is another, namely, "that by some confusion or disturbance in the regular distribution of the food, some of the royal jelly falls to the lot of one or several worker larvæ in the neighborhood of a queen cell into which royal food is carried, by which their sexual organs are more or less developed.

After giving the first position here taken a passing notice, I will endeavor to show how any one, who feels disposed to take the necessary trouble, may satify himself as to the correctness of the second.

While we admit that the kind or quantity of food, or both, received by the young larvæ, *may* have much to do with the developement of the sexual organs, thereby changing the nascent insect from a worker to a queen, may not the *position of the cell* also have some influence in effecting this change? The work of the bee is not in reality its own, but is that of an Allwise Creator, whose "wisdom is manifest in all his works," and who has given this interesting insect a natural instinct by which it is directed in its labor, and its work is perfect. When in a natural condition it makes few blunders, few mistakes, and performs but little if any needless labor. Yet if the change in the position of the cell is unnecessary to perfect a queen, there is a grand mistake made in the construction of every queen cell in the hive, as they are all changed from a horizontal to a nearly or quite perpendicular position. And if the partial developement of the procreative organs of the worker is caused by its having, through some confusion in the distribution of food, received a portion of that intended for royalty, we at once discover that they have made another mistake, by mistaking a worker cell for a queen cell, and a worker larva for an immature queen.

I think a few experiments made with this object in view, will do much towards disproving the fertile worker theory here advanced. In order to be certain that our fertile workers were not reared in the vicinity of a queen's cradle, we will select a colony of native bees in a sash hive from which swarms have ceased issuing—say twenty days after the issue of the first swarm, and as early in the season as possible. We will now remove the native queen from this colony and introduce an Italian queen with one wing clipped, so that we can at any time identify her. We will also remove the hive ten rods from any other, to prevent bees uniting from neighboring colonies, from which swarms may issue later in the season. This should be done immediately after the issue of the first swarm, setting the young swarm on the old stand to catch the returning bees. The next spring, in May, or as soon as the hive becomes sufficiently populous to be able to spare a swarm, and before there are any queen cells constructed, we will take out the combs and look them over until we are satisfied that there is not a black bee in the hive, and that they are all Italians. If, on making the examination, we find the queen with the clipped wing, we are quite sure that no queens have been raised, and of course no royal food used in the hive since the introduction of the Italian queen. About the middle of a warm day, when the young bees are flying, we will remove the hive to a new stand several rods distant,and set on the old stand a movable comb hive in which are a few small pieces of comb and, unless forage is abundant, some honey. And the sooner to reconcile to their new home the bees that will return to this hive, we will give them a small piece of worker comb containing young larvæ: but before any of these larvæ have matured, the piece of comb containing them must be removed from the hive, or we may get our fertile worker from this brood. We will continue to form artificial colonies in this manner, as often as the parent stock becomes populous enough, until we have five or six of them; each time looking over the comb to find the queen originally introduced, and to see that there are no queen cells constructed. In from three to six weeks after these queenless and broodless colonies are formed, we are almost certain to have in some of them, very likely in several, and perhaps in all of them, one or more fertile workers. Yet it will at once be seen that no one of these workers, when in a larva state, could even have tasted royal food, unless such food is used at other times than when queens are being reared, and this I believe no one pretends to be the case.

My first attempt at queen raising was made in the month of May, taking bees for this purpose from hives from which no swarms had issued since the preceding July. I commenced with nineteen small artificial colonies, and from various causes failed to rear a queen in any one of them, from the first Italian brood given them. In most of them I failed, in the first attempt, to get even a worker matured; and in several of them I had fertile workers before there was an Italian bee to be seen. I have since had such workers under similar circumstances, when I was quite certain they never had been fed royal jelly.

From the facts here given I am forced to the conclusion that, although the kind of food a larva receives *may* have an influence in the developement of the generative organs of the future queen, we must look elsewhere for the cause of fertility in a worker. I know that to question the assigned cause of a certain effect produced, as given by another, without being able to furnish a more satisfactory one, is not a very desirable position to take; yet it is one which I am compelled to assume in the present instance.

J. H. TOWNLEY.

TOMPKINS, MICHIGAN.

The old-fashioned box hive and the hollow log with brimstone, are humane compared with the results of the first improvement, viz: top boxes, causing the loss of more colonies than our forefathers "took up." In the old plan bees were "kept over," and had all their season's store —almost invariably enough for winter. The improvement left it to the judgment of the owner how much to take, and he frequently took too much, and not only lost his swarm, but also all they consumed, which loss through the country together is very great. Unless judgment is used in depriving bees of honey, brimstone fumes are more humane than honey boxes, inasmuch as sudden death is preferable to lingering starvation.—*E. Parmly, New York.*

I do not think it right to advocate a system of bee management which allows or encourages persons to be comfortable in their ignorance and laziness. We ought to make such as uncomfortable as possible, so that they will find no rest until they are up with the present knowledge of whatever they engage in. The majority of bee-keepers require instruction, and they can only get it practically and fully through the use of the movable comb hive.—*E. Parmly, New York.*

[For the American Bee Journal.]

Observations and Remarks on Bee Culture during the Year 1867.

The active out door labors of bee-keepers having terminated for the season with the approach of winter, they may now in their quiet homes review the occurrences of the past year, and discuss the topics which observation and experience have presented for consideration—various and novel as these have been.

Refreshing rains in the early autumn of 1866, which followed the long-continued drought that prevailed during the latter part of the preceding summer, brought a variety of fall plants into bloom, and thus unexpectedly furnished the bees with somewhat abundant late pasturage. This led to renewed brooding in most of the hives, and caused a rapid and extensive reduction of the winter stores which had been garnered for the support of the colonies. Perceiving this and dreading the consequences, I took seasonable steps to prevent losses by uniting colonies that appeared weak, and feeding others that seemed inadequately supplied. Though the ensuing winter was very severe and the weather was unfavorable till late in the spring, I still had the gratification to find that most of my stocks escaped with slight injury. This, however, was not the case with those bee-keepers in this district who had prematurely removed and sold their surplus honey—on whose stands consequently many stocks perished. After my bees revived in the spring, I supplied them with flour placed in the neighborhood of the apiary, which was resorted to by them and appropriated with eagerness, so long as supplies of pollen could not be procured from natural sources.

About this time I observed that robbing bees were assaulting one of my weaker colonies Ever anxious to avert and prevent robbing, I immediately examined this colony and found that it had a queen indeed, but was totally destitute of brood. I then resorted to the use of musk, coal oil, contraction of the entrance, disguising the hive, &c., without any beneficial result. Convinced thus that the assault had reached a point beyond remedy, I re-examined the hive and found that the queen had disappeared, and her place was usurped to some extent by a fertile worker. Resolved, however, to turn these robbers to good account and prevent them from proceeding to attack other colonies, I inserted inside of the entrance of the ruined stock a funnel-shaped card, having the interior opening only large enough to permit a single bee to pass, and elevated about an inch above the bottom board. The robbers could thus enter, but not readily find their way out again; and I gave free access to all that wished to explore the interior. At dusk I closed the entrance, and next morning carried it and its contents to an apiary about a mile distant, where I gave the prisoners liberty to fly. Soon discovering that they were in a strange neighborhood, they returned to their late prison, evidently constrained to regard it as their future home. I immediately inserted a small piece of brood comb containing eggs and larvæ from an Italian stock, and was enabled to take from it in a few days, several queen cells to be used elsewhere. In the fall, I found that this colony had secured sufficient supplies for the winter. But I was still more highly gratified to find that I had thus effectually checked the robbing in my home apiary. Spring opened late, but suddenly, and with such superabundant supplies, that all hands were kept busy in making the requisite preparations to enable the bees to appropriate the proffered boon.

At the close of April, I began to form nuclei and artificial colonies, and continued the work to near the end of May, in so far as the movable comb hives in readiness enabled me to operate. Yet at the usual swarming season, the bees, encouraged by plentiful pasturage, seemed seized with a perfect furor for secession, and the multiplication of colonies became a source of great annoyance, though I had previously endeavored to guard against much natural swarming. From many of the smaller and later swarms, I removed their queens, thus constraining them to return to their parent stocks.

On this occasion, I made the observation that the Italian bees are prone to swarm earlier than the black, and that the swarms issue more promptly and with less ado, besides keeping together more compactly while on the wing.

I might have increased my stock threefold, but a twofold increase is already more than I desire, as I regard an average increase of one-third annually quite as much as this district of country will warrant; and even then I resort somewhat to "doubling up" in the fall.

With the exception of a few of the earliest strong swarms, I am better pleased this year with artificial colonies, more especially as the latter seem more disposed to conform in comb-building to the prescription of their owner.

Haste, even in bee-culture, as in most other matters, makes waste, and should be sedulously avoided by every bee-keeper.

While pasturage abounded I used the opportunity presented to acquaint myself with the difference in the honey derived from various sources, such as the blossoms of fruit trees, locusts, lindens, and white clover. Among all these, that from the lindens, the odor of which was distinctly perceptible in the apiary, seemed to me much the best. For this reason the planting of linden trees. (the earlier as well as the later blossoming varieties), should be encouraged by every bee-keeper, wherever ornamental or shade trees can be introduced.

From the beginning of July onward pasturage rapidly diminished ; and the want of rain, with drouth, soon constrained the bees to resort to their winter stores for support.

In the sudden change from abundance to scarcity, amid long-continued severe drouth, may probably be found the source of the difficulties which I experienced this year, in multiplying the Italian race, and more especially perhaps, of the interferences on the part of fertile workers. Have other bee-keepers made similar observations under like circumstances, in their apiaries?

Against apprehended attacks from robbing bees, I was ever on my guard, opening hives only early in the morning or late in the evening, when I had occasion to remove honey, insert to queen cells, or introduce Italian queens. And in this regard also I found a second apiary, a mile distant, —established for multiplying the race in its purity—particularly useful.

The Italian bees obviously resist attacks from robbers much more resolutely than the common kind. But I certainly cannot say that they will not themselves rob, for I have frequently seen them in the front rank of the assailants.

As there was considerably less brood in the hives this fall, than at the corresponding period in 1866, the union of weak colonies to provide an adequate population for the winter, seemed evidently to be the proper course.

The yield of surplus honey was satisfactory. Notwithstanding the severe and protracted drouth which prevailed here, I could take twenty-five pounds on the average, from each of my older stocks. And here again I must say that the Italian colonies proved their superiority; for I was able to take from the older ones more than double the quantity just mentioned. When removing honey, it is ever prudent to deal liberally with your bees, leaving them ample supplies for every emergency, as the best possible place to keep your surplus stores is in the hive itself.

In view of the fact that bee-pasturage differs very much in different sections of country, and that it is desirable to furnish supplies for the bees at all times during the working season, or from spring to fall, bee-keepers should on all occasions encourage the introduction and cultivation of honey-producing trees, plants, and forage crops.

Esparsette, or Sainfoin, is a very valuable species of clover, yielding honey in abundance, and supplying excellent fodder for horses and neat cattle. Repeated experiments, however, indicate that it will not thrive well in this region, though I shall persevere in my efforts to cultivate it. Probably it may be better suited to a more notherly climate. It would be gratifying to see our hillsides covered with this clover for cattle and bees, as are those of some portions of Germany.

I have also made some experiments with the culture of oil plants, such as the poppy, summer and winter rape, &c., but, alas, these likewise do not appear to suit our climate. Mustard and thyme are more promising, where they could otherwise be cultivated with profit; and it is such crops only that are likely to be successfully and extensively introduced.

Within the last thirty years, the *Melilotus leucantha*, white-flowered melilot, a species of trefoil, has been highly recommended in Germany for cattle and bees. On trial, however, it proved to be worthless for cattle, and the culture of it was consequently again abandoned. I found this trefoil in this country as a wild-growing plant, and known as *honey clover*. For the benefit of bee-keepers I have sown it in by-places and uncultivated spots, where it sustains itself, as cattle refuse to eat it. This species of clover was again introduced in Germany a few years ago, under a third name—multicaulis clover; but with no better results. The seed of *honey clover* was sent to France, from the United States, by one of our enterprising seedsmen, and thence distributed under its new name.

Mr. Baldridge, of St. Charles, Illinois, in compliance with my request, kindly sent me a sample of *Melilot clover*; and it seems to me that the *Melilotus leucantha* is about to make its re-appearance among us under a *fourth* name, and seeking acceptance. This I am disposed to concede in a country the vast area of which allows of ample spaces not necessarily devoted to cattle pasturage; as I can corroborate what Mr. Baldridge alleges in its praise. Still we must be prepared to make allowance for the effect of difference in climate; yet if, as I now learn for the first time, that the cultivation of melilot combines other advantages besides contributing to bee-pasturage, it may deserve special commendation.

Let me add another fact from early observation in Germany. My father, who was a devoted friend of bees, had a large old Borsdorf apple tree near his apiary. Yearly, from eight to fourteen days before the blossoms of this tree opened, a drop of white sweetish liquid exuded from the buds, which was eagerly gathered by the bees, amid joyful humming. The benefit resulting therefrom was obvious, as numerous swarms issued about the beginning of May, and the weight of the hives frequently exceeded 100 pounds. The recollection of this impelled me to endeavor to introduce the tree in this country; and imported grafts have been set on several large apple trees. If the blossom-buds before expanding prove to be similarly productive of nectar, as those of the tree in its native home, I shall take pleasure in distributing grafts among bee-keepers. Has any such exudation ever been noticed on the blossom-buds of apple-trees in this country?

I once had the gratification to see my bees gathering honey plentifully from the blossoms of a large male honey-locust tree near my apiary, at dusk in the evening and till late at night.

In Germany, the bee-keepers of our commune were in the habit of consulting and advising with each other as to the particular crops each should grow, from year to year, for the benefit of bee-culture.

Let us persevere in our efforts for the improvement and extension of bee-culture, by interesting and instructing the rising generation therein—there is yet a vast field of observation and experiment unexplored to engage their attention.

By such continuous efforts even our hives have been gradually improved from the original gum to the movable comb, until the latter—particularly that of the Rev. Mr. Langstroth—have been brought to a high degree of perfection. Though bees feel small concern for the fashion of their hives, requiring only a sheltered home adapted to their wants, still it is an error to conclude, as some bee-keepers do, that our favorites had better be altogether uninterfered with. It can by no means be a matter of indifference to the intelligent bee-keeper of our day, what kind of hives he employs. He requires such as are suited to the habits and instincts of the bee, giving them adequate protection, yet permitting an easy inspection of the contents, and enabling him to control, to direct, and encourage their labors so as to secure the utmost benefit therefrom—while at the same time combining simplicity, cheapness, and durability in their construction.

To be enabled to form a judgment from personal observation and ultimately make a satisfactory choice, as well as to afford others an opportunity to see hives of various construction in practical use, I have hitherto adhered to the chief forms of hive employed in Germany and in this country. This has undoubtedly proved a source of trouble in my apiary. I have in use four different forms of Dzierzon hives, though all constructed on one fundamental principle. I have increased the number of my double or twin hives, since I have become practically acquainted with the advantage they offer. Every desirable operation can be readily performed with them, and they can be enlarged or diminished, as the size of the colony therein may require. The condition of the bees and their stores may at any time be ascertained; and stocks can be wintered in them with entire safety, as I have satisfactorily ascertained, on two years' trial, by the preservation therein of several weak colonies with Italian queens. I found these in a very gratifying condition in the spring, with very few dead bees. I have improved this form of hive, by the introduction of a mode of ventilation, to counteract the excessive heat of our summers; and thus, I conceive, have better adapted it to the requirements of this climate.

I have also stocked six of Langstroth's improved hives with the earliest natural swarms obtained last spring; which have done well. So far as I have observed, I regard these hives as best devised among the numerous forms presented, and thus, in connection with cheapness, calculated to secure the approval of bee-keepers. As the lower part of these hives did not appear to me sufficiently thick so protect the bees from the effects of cold in our severe winters, I have covered this part with a layer of straw and cornstalks, from the bottom up to the projecting top—desiring to test fairly this mode of wintering.

I would remark in addition that I winter all my stocks, well protected, in the open air; entertaining misgivings as to the result of burying bees in this region of variable temperature, where heat not seldom suddenly penetrates in the ground. Burying bees, however, may be a very good mode of wintering in more northerly localities.

I have the satisfaction to state that of the complaints formerly urged, that bees are injurious to vineyards, by destroying the ripening grapes, we heard less last season, though the grapes were much sweeter than in previous years. The hard winter of 1866-67 destroyed large numbers of wasps, which were the real cause of the damage sustained; and an opportunity has thus been had to exonerate the bees of the calumny.

Let us now look forward joyfully to the revived activity of our bees in the coming spring, and trust confidently that we shall realize increased and compensating results from our common exertions for the advancement of bee culture.

J. Mangold,

Home, near Cincinnati, Dec. 10, 1867.

[For the American Bee Journal.]

Curious Instances of Swarming.

Last June I put a very large swarm of bees in a new Farmer's hive, which had been prepared in the most approved manner, to make it acceptable to the bees. They entered it to the last bee, and appeared delighted with their new home. At dark it was removed fifty yards from the old hive. I examined them in the morning and saw them flying about the hive, going in and out, but not working. About one o'clock they all sallied out and settled on a tree, but in a few minutes left.

In a few days after, as my colored man was mowing a small lot of clover, a swarm of bees passed along, heard the rattling of an old mowing machine, and concluded to stop on a bush in the clover lot. He went to the house and got the same hive, which they entered, and at once went to work with a will.

In about eight days after, I had a large swarm settle on a small apple tree. I placed it with the stray swarm, and they have worked harmoniously ever since. I have known several instances where swarms of bees have settled on fence stakes. One last spring remained on a stake two days. A swarm was once known to cluster on a large clod in a plowed field. Last June a swarm of Italian bees clustered on the iron window shutters at the back of a dry goods store on Main street, St. Louis. After remaining there for some time, and attracting a great crowd, the porter of the store put them in a nail keg.

A bee-keeper of forty years standing informs me that he once, in Kentucky, saw a swarm enter a hollow tree and remain in it a few minutes, then come out and enter another, and there remain. But the strangest story he relates of the fickle capers of bees happened while he was travelling through St. Charles county, Missouri. A German was plowing corn, a swarm of bees followed after him, and stung his horse. The fellow, almost frightened to death, took his horse out and abandoned his plow, and the bees clustered on the handles. My venerable friend, the bee-keeper, sent the German to his home for a box, put the bees into it, and pursued his journey.

Instances of such waywardness are calculated to shake the belief that scouts are sent off before swarming to select a home. It may be so, but it does not accord with their general instincts.

J. S.

Florissant Valley, Mo.

Answer to a Question.

On page 132 of the current volume of the Bee Journal, Apis says—"It has been said that bees will not build combs on a painted surface." My experience is that they will. I have used painted frames when I wished to exhibit the combs built therein. Bees will build on a painted surface, on a smooth surface, on a rough surface, on tin, iron, brass, zinc, or any other metal. In fact, they will attach their combs to almost anything.

Brooklin, Ontario. J. H. Thomas.

[For the American Bee Journal.]

What every Bee-keeper ought to know:

That the life of a worker bee, during the working season, is only from six to eight weeks; and that a large majority of them never live to see seven weeks:

That a worker is from five to six days old before it comes out of the hive for the first time, to take an airing, and that it is from fourteen to sixteen days old, before it begins to gather pollen or honey:

That all swarms building combs when they have not a fertile queen, build only drone or store comb; and that all the combs in the lower part or breeding apartment of the hive, should be worker comb, except a very small quantity of drone comb—four inches square being amply sufficient:

That the more prolific the queen the more young bees you have, and the more surplus honey they will store up, other things being equal:

That you never ought to cut mouldy comb out of a hive, for you should never let it get mouldy; and that you ought never to double swarms in the fall, for you ought to attend to that, and make them strong during the summer, by taking brood from your strong stocks and giving it to the weak:

That a drone-laying queen should be taken away, and one producing workers put in her place, or the colony must soon perish:

That, as a rule, as soon as an Italian queen shows signs of old age or feebleness, the bees themselves will supersede her·

That all stocks should be kept strong in order to be successful.

That every hive should contain about 2000 cubic inches in the breeding apartment,

That it is useless to put a small swarm into a hive of that size, without a division board, or some contrivance to adapt or bring it down to suit the size of the swarm, and to enlarge it as the population increases: (Give me one pint of bees, a fertile queen, and a frame filled with maturing brood, on the 20th of June, and I will, in an ordinary season, make a tip-top swarm in the hive I use, without assistance from other swarms):

That beginners should be very cautious about increasing their stocks rapidly, until they thoroughly understand the business:

That the hive itself is all the bee-house you want in the summer season:

That a good dry cellar is as good a place to winter bees in as you want:

That a forced or artificial queen started from the egg or larva, in a small nucleus, is not as prolific as one started in a strong swarm: (You can remove the cell to a nucleus after it is sealed up):

That extra queens should be kept on hand, ready for any emergency; because, if you discover that a swarm has lost its queen, and you supply it with eggs to raise one, unless you keep strengthening it with brood from other swarms, eight weeks will elapse before the workers raised from your young queen will be ready to go to work—and eight weeks is the lifetime of a worker bee, in the working season. If you doubt that eight weeks is the lifetime of a worker at such season, take away a black queen from a black swarm and introduce an Italian queen. In three weeks your last black bee will have been hatched, and in eight weeks from that time your swarm will consist of Italians exclusively, provided the exchange is made on or about the 20th of June. (See then, what you are to think of a patent hive with ever so many contrivances for taking away honey, but no place to raise bees to gather that honey):

That it is bad policy to divide a swarm in such a way that one part has to raise a queen after the division is made; for if they build comb, it is drone comb; and if they do not build comb, as fast as the brood in the old comb hatches, the cells will be filled with honey; so that when your young queen is ready to lay, there is no place where she can deposit her eggs. The consequence is your swarm will be strong in stores but weak in numbers in the fall, unless you exchange combs with some other swarm:

That you ought to give your bees flour (some say rye-flour is best, but I always use wheat flour), in the spring, before they can gather pollen, to promote early breeding. Set it in the sun, out of the wind, near your bees. A square board with strips nailed around the edges, is as good as anything to put it on. Ten swarms will use from three to four quarts per day:

That bees do not feed this flour or pollen directly to their young; but it is elaborated in the stomach of the bee, on the same principle that a pigeon eats corn, wheat, &c. and elaborates it into chyme or milk to feed its young on, before it is six days old:

That you must feed bees just at night, if you feed honey or any other sweet to promote breeding, and thus prevent robbing. Or if you exchange combs in the spring, to equalize their stores, it should be done just at night:

That if you allow natural swarming, bees may swarm so low as to ruin the old stock if not attended to. It frequently happens that where a stock sends out three or four swarms in succession, the last queen goes with the last swarm and leaves the old stock destitute:

That it is not necessary when a swarm comes out, to allow them all to cluster before hiving. as soon as a part of your swarm has lit, hive them, and the remainder will go right into the hive:

That a newly painted hive, if it has been painted long enough so as to be dry, is as good for use as one that has been painted six months:

That because you may be fond of whiskey, it is not necessary to sprinkle the inside of the hive with whiskey, in order to have the bees stay. I once knew a man to do so; and, strange to say, they actually did stay:

That if you put one drop of Prof. F's Bee Charm on your right ear, it will prevent the bees from stinging your left heel—provided you keep on your boots, and do not let the bees get inside of them. E. Gallup.

Osage, Iowa.

A warm, calm, and showery spring causeth many and early swarms. But sudden storms do hinder them.—Butler.

[For the American Bee Journal.]

Water for Bees.

Water is a prime necessity for bees, as well as for other animal systems—constituting the major part of their weight and substance, the medium of nutrition, secretion and excretion. The air is the medium of distribution, holding immense quantities suspended. All creatures imbibe water by the breath and absorbents, the different proportions in the air making the difference between the lean and dingy Arab and the plump and fair-skinned Englishman.

Condensed vapor is necessary for the bees in winter, for the air is then drier; and when they breathe less they must drink more. This is obtained by eating more honey and breathing more air, generating more heat and water. Upward ventilation is always and entirely wrong, because it lets off the heat—thus compelling the bees to eat and breathe more, generating more water, while the cold checks perspiration, fæces accumulate, and dysentery is the result. Two small swarms together consume no more than one, and generate no more water because they are warmer. But put them in a narrow circular cavity, with solid walls, surrounded with bark and lined with dead wood, and they will generate no more water than they need.

The bee has existed since the dawn of creation, and under the protection of an unerring instinct has outlived those changes and convulsions that have destroyed other races, and extended its range from the equator to the frozen regions. But man, comparatively a creature of yesterday, comes upon the scene, and though he has the same reason to believe that the bee and the hollow tree were made for and adapted to each other as the bird and the air, or the fish and the water, he tells us that the bee has been suffering and languishing before the advent of man, for want of upward ventilation in winter, and a little water on a sponge occasionally; and if they had had the upward ventilation they would not have suffered in the spring. Thus, though he knows nothing of matter except its phenomena, he decides in the bloom of his self-conceit, the antiquated plans of the Deity to be a failure, which ought to be set aside in this enlightened age.

We know that instinct varies with climate, anticipating and providing for irregularities in the seasons; and it would seem that the Deity should have discovered these triumphs of human wisdom, and cease to impress on the passing generations of the bee that mulish obstinacy which causes them to fly away from the glorious inventions of man to "a miserable home in the woods."

I differ from apiarian writers of ripe experience, eminent for natural and acquired abilities, to which I make no pretensions But upward ventilation is inconsistent in theory, expensive and dangerous in practice, condemned by instinct, at war with facts, and a bald denial of the wisdom and goodness of Deity. F. H. MINER.

LEMONT, (ILL.)

After a moist spring, when swarms are most plentiful, is robbing most rife; otherwise there is less danger:—BUTLER.

[For the American Bee Journal.]

The Egyptian Bee.

EDITOR BEE JOURNAL:—Many of our correspondents are calling our attention to the clause in our circular for 1867, in which, speaking of *Apis Fasciata*, commonly termed the Egyptian bee, we say—"We can speak warmly of their great beauty and will give the public our judgement of their relative value, when we have subjected their claims to a thorough test in our climate." It seems to be expected that this report can *now* be made. Owing to a peculiar combination of circumstances such is not the case.

We received in November, 1866, two distinct importations of these bees. Their coming had been delayed until we had given up all expectation of their arrival that season; and we had consequently no colonies prepared for the reception of the queens. They arrived late in November, and it was several days later when they reached our apiary. The weather was unusually unfavorable, even for December; and some of the queens perished from exhaustion long before they could be introduced. Others were not to be found when the stocks to which they were introduced, were subsequently examined. As our order for another supply of queens raised in 1866, and thoroughly tested, had already gone forward to the Berlin Society of Acclimatization—the queens to be shipped in April, 1867—we still hoped to be able to breed and test this variety last season, though we returned all monies received by us on order for Egyptian queens. But we found it impossible, although having a personal agent in Europe, to expedite matters in the least. Herr Vogel, who breeds these bees for the Society, was absent in Egypt during part of the season, and we did not succeed in getting our importation of 1867 in time to breed from them to any extent last fall. We are therefore able to say little more about *Apis Fasciata*, from personal knowledge, than we could have done a year ago. Those apiarians who are expecting a report from *us*, in regard to the merits or demerits of this variety in any or all points, must consequently await the results of another season's operations.

L. L. LANGSTROTH & SON.

OXFORD, BUTLER CO., OHIO, JAN. 1, 1868.

Bees may have too much honey to winter well. Mr. Cary says bees will not winter well in solid honey. There must be a fair number of open cells for them to cluster in and keep their heat, by being in a compact mass. When the cells are all capped they must necessarily occupy more than double the space, and cannot withstand extreme cold weather. Mr. Cary also observes that bees do better in a dairy region than where large numbers of sheep are kept. Sheep eat very close and consume clover heads and flowers that cattle would leave; thus the bee is deprived of food. There is a marked difference he says, in some parts of the country, where the farmers have changed from cattle to sheep husbandry.—*E. Parmly, New York.*

[For the American Bee Journal.]

The Italian Bees at Home.

Reading the first volume of the "American Bee Journal," I found on page 213 a communication to the *Bienenzeitung*, from F. A. Deus, who, in company with three other members of the Apiarian Convention held at Mayence in 1866, made a tour through part of France, Switzerland, and Italy, after the adjournment of the Convention. Mr. Deus notes particularly the various places, on their route, where Italian bees occur, and describes their appearance. The close of the communication reads as follows:—

"At Lago Maggiore and Lago di Como, we found Italian bees exclusively, and of the most perfect type, like those of Genoa. These districts, indeed, appear to be their chief *habitat.*"

Does not this report agree with Prof. Mona's certificate and my account of the native *pure Italian* bees? It is here likewise, in this region of country, that the Italian bee was found *exclusively*. But I fear that this report will be regarded as of no account, in opposition to Prof. Varro's *ipse dixit.*

On page 2[illegible] of Dathe's pamphlet, Dr. Ziwansky is quoted as saying—"We may the more confidently decide in favor of this source (of procuring Italian queens), inasmuch as no black bees whatever are found in the entire Canton, (Tessin), and we may therefore feel assured that we shall obtain thence no other than bees of the genuine and pure-blooded race."

But Prof. Varro is acquainted, from his youth, with a man who has seen Italian bees in Italy too; and because he had seen Italian bees in their native clime before Mr. Uhle or I saw Italy, there must be black bees found in that region of country.

ADAM GRIMM.

JEFFERSON, (WIS.)

Interference of Common Drones.

In the February number of the BEE JOURNAL, (page 160,) the question is asked —"Can Italian bees be raised and kept pure in a location where black bees are abundant?"

I will tell you what I know about the matter.

In the summer of 1866, two of my stocks were partly hybridized—about ten or twelve per cent. having one bright yellow ring.

The queens in these two hives produce hybrids in about the same proportion, not having swarmed last summer.

Now, I have no Italian bees, nor was there at that time an Italian stock within a circle of five miles from me. Mr. Clark, living five miles southeast of me, had in 1865 an Italian queen leave and go to the woods with a swarm, going in a due west direction. If they continued in that direction for a distance of four miles, they would strike a point four-and-a-half miles south of me. Perhaps one half of this distance is woods; the other half cleared land. Now that was the only chance for my queens to be fertilized by Italian drones.

I keep from forty to fifty stocks, all black bees. Why are no all their progeny hybrids? That is, the progeny of those two queens.

I wish you would tell us how to feed bees in the Langstroth hives.

I wish all persons writing in papers would put their name and location to their articles. The reason for wishing this is, I saw in a paper a very good article on bees, wherein the writer says he has good success in feeding bees with an invention of his own—with no name but correspondent of N. Y. Rural.

J. W. HUNTER.

PIQUA.

[For the American Bee Journal.)

The Bee Journal.—Foulbrood.

The February number of the BEE JOURNAL is received, and I must say that it is to me the most interesting number that has appeared. I am pleased to see each number steadily improving in interesting *practical* information for bee-keepers. If your readers do not get the worth of their money, *it must be* their own fault.

The first article in the present number, which treats in detail on the character and treatment of *foulbrood* is alone worth the cost of a complete volume. To many readers, if they will study it well, the information is richly worth $10, and may be worth $100. I have had several years experience with *malignant foulbrood*, but have had none since I came West. My apiary in Western New York, where I lived prior to 1861, was nearly ruined; and I know of several aparies in that section, that were entirely destroyed. It requires the utmost vigilance to keep it in abeyance, and to make bee-keeping profitable where this disease is fairly established. I have had so much experience with foulbrood that I am satisfied; and will have no more of it, so long as there is a section in the United States to be found where it is unknown. I hope it will not be introduced in the West; but am fearful it is already in some of the apiaries in Iowa. The shipping of Italian bees from apiaries where the disease is established, throughout the length and breadth of our land, will be the means of introducing it into many parts of the country, if any thing will.

M. M. BALDRIDGE.

ST. CHARLES, ILL.

THE large Rhododendron, Mountain Laural, or Rosebay, yields honey abundantly, but of a deleterious and poisonous quality, though not injurious to the bees themselves. During the period in which it is in bloom, in June, bees should not be allowed to store honey in supers, where this plant abounds; and combs containing such honey should be retained in the hive for winter supplies. This can be easily accomplished, where movable comb hives are used. Honey derived from the Kalmias, (common and dwarf laurel) should be treated in the same manner.

[For the American Bee Journal.]

How I became an Apiculturist!

I was born in France. My father, a country physician, sent me when six years old to my grandfather, a locksmith, in the city of Langres, for my education. There, during nine months in each year, while pursuing my studies, I was between school hours in daily intercourse with the workmen and learned to handle their tools. And during my vacations—two weeks at Easter, and eight in September and October, I enjoyed country life. The handling of mechanics' tools was afterwards of great service to me, enabling me to manufacture the various hives which I found described in bee-books, and in treatises on grape and tree culture. Much attention was given to those subjects, and my father's garden was well stocked with trellisses and espaliers.

Yet, in all the country nothing was so attractive and pleasing to me as the sight of a neighboring hive of bees; so that I sometimes spent hours in watching their labors. Of course it was impossible for me to examine the interior of their home, but the matter only became the more attractive the more mysterious it seemed.

Knowing my predilection for bees, the old pastor of the parish sent for me one fair day in April, under the pretext that he wanted me to assist him in pruning his hives; but really to afford me the enjoyment of seeing the internal arrangement of the hive, and to treat me afterwards to a good slice of bread, thickly spread with new honey fresh from the combs!

Muffled up, according to the fashion of that day among bee-keepers, in a coarse linen blouse provided with a visor of heavy and coarse meshed wire cloth, sweltering under the unaccustomed and inconvenient costume, we had already pruned several hives, when the pastor's servant introduced in the garden a man asking for her master. He proved to be a young butcher, who was to be married next day in a neighboring village, and called to obtain from the parish pastor the nuptial consecration and the confession billet which he was required to exhibit. "Well," replied the pastor, as soon as he had unmasked himself, "I will give you the billet; but do not approach so near the bees, or you may get stung." "Don't care," rejoined the butcher, "as I kill oxen, I need not fear flies." Accordingly as soon as a hive was inverted, he would bend forward with his head over it. The old pastor, skilled for years in bee management, had so cautiously handled the bees that all the hives, save one, were pruned without accident. The last hive was now inverted and the butcher as usual examining its interior, when either by way of a joke, or because he was wearied of being thus annoyed in his work, or perhaps vexed that a sheep of his flock should treat him with so little reverence—or possibly incited by all these motives together, the old pastor struck the hive lightly, as though inadvertantly, with his pruning knife. Instantly I saw the butcher drawing mutely from his forehead a stinging bee; then another from his cheek, and a third from his chin. At last, vanquished by the bees, he fairly ran away, shouting—"*Ah, les mastives! (Ah the dogs!) they are worse than oxen!*"

We were told that, next day, when, arrayed in his wedding suit, he called on his bride to lead her to the church, she at first refused to recognize him, so much was he disfigured—his very voice, modified by his swollen lips, was totally changed. Returning to the city some days after this, I narrated the butcher's experience to my schoolfellows. Thenceforward, for months, "*worse than oxen!*" was the rallying cry of my playmates, just as "*Ohe, Lambert!*" is that of the cheerful lads of Paris.

On my return to the country, the following September, a pretty swarm in a bright straw hive was, to my great joy, installed in the lower part of my father's garden. It was a fine after-swarm, presented to me by the old pastor. As that year had been very favorable for bees, one half of the hive was already filled with combs. Searching immediately in the old library, purchased of his predecessor, I found several books on bees. Some of them reproduced all the erors I credited since the days of Pliny and Columella; but happily there were also, pearls among rubbish, Huber's immortal works, and a manual on bees presented to my father by his compatriot M. Lombard. Educated in Langres' liberal school, I was little prepared to take on trust all the whims and predjudices about bees, contained in the books. Hence I resolved to repeat fairly a part of Huber's experiences. But fearing to displease my benefactor, the old pastor, who believed that a disturbed swarm was sure to perish, I contented myself with watching daily the busy flight of the industrious bees, happy with their happiness, and dreading to find them dead whenever the cold prevented them from flying out. Very reluctantly did I part with my swarm on the first of November, to return to school, bringing with me my bee-books, and leaving my hive well protected by an ample straw cover, and well supplied with bees and honey.

During the following winter, I purchased with my pin-money, some boards and with the aid of an old carpenter, a friend of my grandfather, I constructed two Huber leaf hives. These I took with me the next spring to my father, urging him to put in them my one or perhaps two expected swarms. But I had not taken the old pastor into account. He was sure the bees would never thrive in such wooden hives. My father, following his advice placed the only swarm I got that year in a common straw hive. But, alas! that was not the worst of it. My father sent his carriage for me in August, informing me that a waterspout had the day before thrown down five large stone houses in our village, and half-drowned my good friends, as he was accustomed to call my bees. Indeed on my arrival my heart was distressed at seeing the lower villagers engaged, among scattered ruins, in washing their clothes and furniture, soiled by immersion in the yellowish water.

As for my swarms, they were both half dead under a pear tree crushed down by an overthrown wall against which it had been trained. Neither Huber nor Lombard had foreseen such a case, and I could not learn how to save them. They perished in the ensuing winter.

Such was my first step in bee-culture. If you and your readers are not wearied with the narrative, I will give an account of my second attempt in your next number.

CHARLES DADANT.

HAMILTON, ILL. JAN. 1868.

[For the American Bee Journal]

Evaporating Nectar.

Some bee-keepers hold that bees gather honey from flowers and deposit in the cells immediately, and if the hive is patented on purpose for evaporating honey, or the watery parts of it, it evaporates of itself, and when thick enough the bees seal it up, &c., &c. Query, how did the bees get along before these excellent contrivances were patented for them? Well, that is just what I am going to tell you, for I never taught my bees any of those patent tricks.

When bees gather honey, maple sap, or any other watery sweet, more than their honey sacks can contain, they deposit it in the cells until evening, and then they hang in festoons or clusters in the hive, each one in his place—that is, one below the other, each one's trunk or proboscis clear when extended, so as not to touch another bee or anything else. Then by their great roaring, humming, or whatever you have a mind to call it, they create a great degree of animal heat; their sac is filled with this liquid, which is then blown out to the end of the trunk, stirred over, and drawn in again to warm up. This process is repeated until the liquid is sufficiently evaporated to be deposited in the cells and sealed up. Take a short straw in your mouth and blow a drop of water gently through it out to the end, and then draw it in again, and you have an idea of the process, all except the stirring up. The bees do that part better than you can, because they have tools made on purpose for that business. "Well, Gallup, that can't be," says an objector, for I have kept bees, my father has kept bees, and my grandfather kept bees, and we never saw any such thing." Your argument is a good one, for it is the very argument used by an old grayheaded man not long ago to me at an agricultural fair, to prove that there is no such thing as a queen bee! (Many a night have I lain beside an observation hive till 12 o'clock, watching the little fellows in their labors). This process goes on through the day also; but there are so many bees then out in the fields gathering, that it does not go on near so rapid. A swarm that is gathering honey very slowly will not show any of this process. You will be most likely to see it going on when the bass-wood is in full bloom. Enough on this subject at present.

Do you know that the Italians eat candied or granulated sugar, which the black bees refuse? That is another good quality. They will even go into your sugar box, and eat dry sugar, if you let them.

I am anxious to know whether Mr. Grimm arrived with that hundred queens all right. Let us hear from you, friend Grimm, through the BEE JOURNAL.

ELISHA GALLUP.

OSAGE, IOWA.

[For the American Bee Journal.]

Another Singular Case.

MR. EDITOR:—On the 10th of May, 1867, I deprived an Italian colony of its queen, and on the 20th of that month I examined it and found it had constructed twenty or more queen cells. Some of these I carefully cut out and inserted in common colonies, having previously abstracted and destroyed their queens. In examining one of these colonies a few days afterwards, I found that its young queen had emerged from the cell in a natural way; the cap of the cell having been displaced and its edge uniformly smooth and horizontal. I now regarded this colony as being in possession of a young Italian queen; yet I was somewhat astonished to find a queen cell of their own construction capped over, within a couple of inches of the cell which I had inserted. As this cell was, however, situated near the edge of the comb at the bottom of the hive, where the young queen was not likely to frequent, I supposed it had been overlooked by her in her search for royal cells, and as I could not see any other in the hive (common box hive), I concluded to destroy it and await further develepements. Some ten days afterwards, I examined this hive again, to see if all was well, when to my surprise, I could see no brood or sign of any. I therefore supposed that the young queen had got lost on her ærial excursion, and I forthwith introduced into the hive a young, unfertile, bright yellow Italian queen, rather below medium size, and somewhat feeble in its deportment. I then awaited the elapse of ten days or two weeks, when upon examination, I found considerable brood in the comb; and after the lapse of still greater length of time, I had the pleasure of beholding both in and out of the hive, as bright and pretty Italian bees as I ever saw, all three-banded, without an exception. About the 15th of August, I proceeded to transfer this queen to another hive, which I wished to Italianize, when lo! not a larva or brood in any stage of developement was to be seen in the cells. I however removed the queen, but had to wait ten days before I could get another ready for introduction. Then once more to my astonishment, I found in this same hive, any amount of brood capped over. But the strangest thing of all was, that after waiting till some of the brood would hatch, that I might test their purity by their color, I discovered that they were black bees, without a trace or sign of Italian blood in them. I then went to work and drove out a black queen, without a shadow of doubt as to her purity. This hive stood three feet from any other hive, on a separate board, by itself. Now, Mr. Editor, two questions present themselves here, which I would like you or some of your correspondents to answer. The first is, where did this black queen originate, and how came she there? The second, Why did the young Italian queen cease to lay so soon?

JOHN L. MCLEAN.

RICHMOND, JEFFERSON CO, OHIO.

[For the American Bee Journal.]

Oats for Bee-Feed!

Yes, oats for bee-feed! Why not? Does any one doubt that oats contain the proper nutritive element for bringing forth and sustaining animal life? Of course not. But are bees to eat them? Well, kind reader, as the process is a *leetle* different from the manner in which we feed them to our horses, if you will be patient, we will try and tell you how we first got in the way of feeding our bees on oats.

In our earlier researches we were quite captivated with the idea of feeding our bees on rye meal; and of course our first transferred swarm had to have rye meal along with the other favors we heaped upon them. Mr. Langstroth, in his book, recommended it, and as we did not wish them to be destitute of any of the *necessaries* of life, we bought fine rye flour from a feed store, the nearest thing we could get to rye meal, and poured a lot down on the front portico of the hive, expecting to see them rush out and devour it like a lot of famished pigs. But they did not! And as they seemed determined *not to* touch it, we put it in the entrance, so that every bee, whether he would or not, must have some of the very essential rye flour. After having thus eased our conscience by thinking that we had certainly done everything proper, we left them until evening. When we first came home, as usual we had to look at our bees, and were surprised to find a considerable number "lying around loose" in front of the entrance, looking wofully white and dispirited. On opening the hive (which we usually did every morning, night and noon), we were met by about as sorrowful a looking set of floury miller-like sentinels as can be imagined.

Talk about throwing dust in one's eyes! Our bees looked as if they had all the dust they would need for a life-time; so we brushed the rest of the stuff away, and took a further look at our bee books.

We finally learned that we must wait until spring to have our bees reap the grand results of the meal feed; so our meal was carefully put away. Spring came at last, as it has a habit of doing usually, we believe; and we resumed our experiments.

We put the flour *on* the hives, *in* the hives, *away* from the hives, mixed with honey, yolks of eggs, and every way we could think of; but they would have none of it at all. We put it in a linen bag over the frames to keep them busy on rainy days, as the first volume of the Bee Journal recommended; but not a meal would they touch, and we were obliged reluctantly to let them have their own way.

The second season so much was said of the advantages of rye meal by all, Quinby, Bee Journal, and rest, that we felt as if our bees *must* be learned to use it too. And hearing some one remark that a scientific old farmer used to grind oats for his bees, we decided that we would try oats; and accordingly astonished the miller by ordering a bushel of oats and the same quantity of rye to be ground up fine, but left unbolted, to feed bees! Our grist was sent home, and with some misgivings we put a broad board on the top of a barrel a rod or two from our apiary, sprinkled on the meal, and told our friends that from a recent discovery in chemistry it had been shown that the above mixture possessed essentially the same properties and elements of the pollen gathered by the bees from flowers, and that they—the bees—would appropriate it accordingly.

Now, Mr. Editor, don't you think it was consoling to our feelings, when upon coming home at noon, we found hosts of bees hovering over, dabbling their feet into, and rolling up balls of this artificial pollen, as happy apparently as if they were in a clover field in June? Didn't we cry "Eureka!"

From that time until natural pollen could be got, we fed them about *three pecks*, and our apiary then only comprised about a dozen hives. The swarms that were busiest, and amassed the most, were by far our most productive stocks, and one that particularly excelled all the rest, was the stock and swarm that produced the 117 pounds of box honey mentioned last fall—the swarm collecting thirty pounds in two days.

We are making preparations now to have plenty of the oats and rye ready, just as soon as the bees begin to fly. Hurrah, for the tons of honey we are going to have this year. You know, Mr. Editor, that Giantess is going to help after we get her home. By the way, will you please to thank Mr. Gallup for his kind article on page 150. The tree is so large, we shall have to run the risk of cutting it in April, as he suggests. After cutting down a tree of such height and transferring, will all the bees find the hive, especially if the queen happens to be killed?

We were going to sign ourselves Novice, as usual; but as every one knows that, we will omit it, and say,

Novice,
with all his old enthusiasm, and impatience for the arrival of spring.

P. S.—A friend who is jealous of our great discovery, says that's a "big yarn" about the bees eating three pecks of meal. He says the neighbor's chickens flew up and ate it, and the wind blew it away. You don't believe him, do you, Mr. Editor?

By no means, for the Baron of Berlepsch assures us that in the spring of 1857, the 103 colonies then constituting his apiary, carried in 354 pounds of wheat flour. His colonies were poor in stores, and he supposed that between 300 and 400 pounds of candy would be required to sustain them till they could gather honey. But after furnishing them with flour, they drew so sparingly on their stores that only *eleven* pounds of candy were needed.—Ed.

In their labor and order, at home and abroad, bees are so admirable, that they may be a pattern unto men, both of the one and the other. For unless they be hindered by weather, weakness, or want of matter to work on, their labor never ceaseth.—Butler.

[For the American Bee Journal.]

Experience in Italianizing.

By Another Novice.—No. 1.

Mr. Editor: By request of a bee friend I propose (if it will not crowd out more valuable matter from the Journal), to write part of my experience in Italianizing. After having gone through a series of dear-bought experiments, and being now able to manage bees successfully and with ease, I pretend to be nothing more than a novice still.

I think it the duty of all those engaged in the business, to communicate to the Journal, the results of the most interesting and scientific part of their experience. By so doing they may facilitate advance in a fascinating branch of rural economy, and thus make it easy for thousands of families otherwise favorably situated to manage bees with ease and success.

I begin with the finding of the queen. By the way, I can now find a queen with ease, in from three to fifteen minutes, with but few exceptions. But my first attempt was long, ludicrous, and somewhat singular. Yet, if my experience was valuable to myself, it ought to be still more so to beginners; and I hope it may be the means of saving thousands from a like mishap.

In July, 1866, I received notice from Mr. Quinby that the two queens, which I had ordered for myself and a friend would be shipped on the 18th. Intending to introduce on the ten days' system, I went at once to remove the old queens, so as to be ready to introduce on the arrival of the queens.

On Saturday afternoon, I began my search for the queen. Having never hunted for one before, I felt it a very hard task, as the reader will soon see. I had previously carefully consulted Quinby and Langstroth, so as to facilitate the undertaking. But a singular occurrence took place, which I am yet unable to account for, and which was the cause of all the trouble; and the loss, moreover, of the queen which cost $7.50, including express charges. I searched carefully a frame at a time, spending almost ten minutes on a single frame; then set them in an empty hive to keep out robbers, spreading a cloth over. I may state, in passing, that I used Quinby's Improvement of the Langstroth hive, with eight frames. I noticed a cluster of bees on the bottom board, about the size of a dollar. Supposing it to contain the queen, I lifted it out on my hand, disengaged the bees, and found a real queen; but she was just alive, and died in a few minutes. Her abdomen had shrunk up, so as to make me doubt whether she was a queen; though otherwise, she was just the size and shape of a queen. I had seen and handled a great many before. The bees clinging to her as I carried her to the shop, confirmed me in the opinion that I had the queen. Being satisfied, I then gave up all further search.

The following Monday I went to help my friend remove his queen, and found her after a long search of near 2½ hours. Upon comparing her with my dead queen, we concluded that mine was not a queen—her abdomen being a good deal shorter I engaged him to come next morning and help me to hunt my queen. He came, bringing his dead queen with him, she having died the night previous from exposure. Upon comparing her with mine, they were exactly the same size, the abdomen of his having drawn up in death precisely like mine—further search was given up, being satisfied I had the queen.

The following Saturday the Italian qeens arrived all right. In the afternoon, just eight days from the removal of the supposed queen, I went to look up and remove the queen cells, in order to introduce. But, to my surprise, not a queen cell could be found. I never felt more bothered what to do. Should I hunt for a queen when there was none? Or was there really a queen in the hive? Did they have two? I spread a cloth over, to keep out robbers, till I consulted my bee-books. Every book was against me, and in favor of a queen being present. So I went to work and searched near four hours in vain. Half the bees went under the bottom board, during the search. I left them to come out and enter the hive at will, not dreaming the queen was with them. Next morning, finding them still there, I tried to dislodge them with a brush; but they obstinately refused to enter the hive. I left them and went to meeting, supposing they would all be in the hive on my return. Returning about sunset, I found them still there. Now was my time to have secured the queen with the utmost ease; but I had that to learn by dear-bought experience. Knowing no better, I set the hive on a new bottom board; removed the old one with the bees under it; set the new one on its place; and then poured the bees down at the entrance, which they all entered immediately.

This case so bothered me that I sent for a friend five miles off, who had some little experience in introducing queens, to come and help me. On my way from the polls next morning, I met another who had a little experience. He was riding my way and stopped; but was too sick to do more than to examine a frame, and see they had a queen. He said there was every sign of the presence of a queen. After he left I commenced the third search, but had not gone far before I found a good many queen cells the size of an acorn shell started. I then stopped, supposing they had just started these cells, and that as I was to introduce my friend's queen the next day, I could learn more about it by seeing how it was done in his hive. There I found eleven queen cells mostly sealed over, which I removed, and then introduced the queen successfully. Next day I went to see how my bees got along with their cells. Instead of being larger, as I expected to find them, they had not improved a whit; on the contrary, some of them were being cut down. It then struck me that these cells were started during the twenty-four hours the queen was under the bottom board. Being now convinced that they had a queen, or, I might say another queen, I determined to find her that day if she was ever to be found. After hunting in vain until the sun got hot, I divided them into three parts, to rest till towards evening, taking the precaution to keep out robbers. Went to the renewed task about half past three in the afternoon, and the queen was found just as it was still light enough to distinguish a big bee from a small one, and in *twelve days* from the time I commenced !

If the reader will pardon this lengthy detailed account of the search for and finding of a queen, I will tell something better in my next.

P. S.—The above colony had not swarmed that season. How do you account for the presence of two queens, or was I mistaken ?

LOWELL, KY. A.

☞We think you were not mistaken. There were doubtless two queens present in the hive —which may be accounted for, by supposing that the bees had reared a young queen, and were actually engaged in superseding the old one, when you began your preliminary operation for Italianizing. The expiring queen found enveloped in a cluster of workers, explains the seeming anomaly.

[For the American Bee Journal.]

Bees in Hollow Trees.

MR. EDITOR:—I saw in a late number of the JOURNAL an inquiry to which an answer is desired. I am no correspondent of any paper, nor a practised writer, but a plain matter of fact man, and may be able to give some information with regard to bees located in the top of a tree, and offer some suggestions how to get them down, as I have had considerable experience in such matters. Hence I propose to tell how I would get Giantess down, and our friend can judge whether it will *pay* or not.

For some time I have been very successful in hunting and finding bees, and then taking them down in the log. I always considered it hard and barbarous to fall the tree, and thus destroy the bees and lose most of the honey. Now for the first one. I found a swarm in the spring of the year, and was anxious to save them. They were in a hemlock tree, about eighty feet from the ground. I managed to get a rope over a limb about forty feet from the ground, then climbed the rope, and went up to examine the location of the bees. When I go up a tree I always carry a line in my pocket. With this I draw up an auger and then bore in, to ascertain where the honey and the bees are located. I then stop them in, and then draw up my saw. If the top stands perpendicular, I ascend to it and cut off the limbs on one side of the tree—thus throwing the heft of the tree top on the opposite side. Then feeling sure which way it will fall, I saw above bees and honey and let the top fall. I now draw up a line of sufficient strength to sustain a pole about ten feet long and three or four inches in diameter; having prepared the pole before I ascend or having an assistant to do it, as follows: Bore a hole near the larger end of the pole, another about three feet higher up, and a third near the top or smaller end. I now draw up this pole and place it where I need it, the top end about as high as the log containing the bees. Now take a strong rope about thirty feet long, pass it through the lower holes and around the tree. Be thorough in this matter, tying the pole to the tree, and making it secure. Now take another rope, about twice the length from the bees to the ground, pass it through the upper hole in the pole and around the log containing the bees, having the other end of this rope extending to and on the ground. Have the rope kept taught. Two men below will hold it, but it may be well to take a turn around a log or tree, thus making it more safe and easier to hold. Then go below where the bees are located, and saw off the log containing them. Give the saw a direction inclining obliquely down, and as the log is cut off it will slip from the stub and be suspended between heaven and earth. Now, ease away below, and your *giantess* commences to descend to the ground.

It may be well to smoke the bees before you begin to disturb them. After they are down, fasten them in with cloths or tack on boards; and on a spring wagon carry them to their new location.

I have taken down twenty swarms from the woods. One from a tree 110 feet six inches high by actual measure. If the tree is clear of limbs seventy or eighty feet up just as well. Perhaps you would like to know how I get up, when I cannot ascend with my climbers. There it is. Just take a pound weight, (I prefer lead cast in an egg shell set in sand, placing a wire for a loop in the shell, and running in the melted lead, which gives you such an implement as I use). Tie a small line in this loop, unwind and lay it an clean ground or free from bushes. Take a stout string or piece of eel skin about two feet long, and make it fast to the loop in the lead, and now with a little practice—or perhaps considerable—you will be able to toss the lead ball where you wish it. This weight carries your small line, that will in turn draw up a clothes' line, and that a line sufficiently stout and strong to operate with. Now make a fast loop in one end of the rope; put your leg through; take the other rope in your hands, passing the rope that suspends you within the folds of your arms. Let one or two men take hold of the rope and pull, and up you go. But there is danger, and as you fix and arrange matters, use discretion, and think I may not take down any more; although if I had an Italian giantess up there, she would soon find herself located in my apiary.

I have at this time about eighty stocks. They have done finely the past summer. Some logs are standing in my yard at this time. I may transfer them in the spring. By and by I may give my experience in hunting bees in Virginia on the James. W. C. NEWTON.

FULTON, N. Y.

Among all the creatures which our bountiful God hath made for the use and service of man, in respect of great profit with small cost, of their ubiquity or being found in all countries, and of their continual labor and comely order, the bees are most to be admired.—BUTLER.

[For the American Bee Journal.]

Bees in Cliffs.

Mr. Editor: Enclosed you will find a list o names of bee-keepers. I cannot say that any of them will subscribe for the Journal, but I am satisfied it is worth the money, and that it will richly repay any one interested in bee culture.

In my neighborhood we have nothing but the box hive and the common black bee. In the coming spring, I expect to get some frame hives, but am at a loss to know whose patent to get. I also want some Italian bees, but do not yet know whom to purchase from. I want the purest I can get with the least expense. I noticed in your January number that Mr. J. R. Gardner, of Christiansburg, (Va.,) states that he had purchased three Italian queens for ten dollars. They were cheap, indeed, if they are pure Italians.

I am fully satisfied in my own mind that bees, with proper attention, can be made very profitable in this part of Kentucky. The black bee in its wild state, is found in hollow trees, and sometimes in cliffs or bluffs along our water courses. There is a bluff in Edmonson county, Kentucky, near the Mammoth Cave, in which I am credibly informed, bees have been working for many years. The oldest citizens say they were there as far back as they can remember. The cliff is said to be two hundred feet high and perpendicular. The bees work out at a hole in the rock about half way up the cliff. They are represented as being very numerous, and there are many speculations in regard to the quantity of honey stored there.

There is also a similar colony of bees in the bluffs of the Cumberland river in Cumberland county, Kentucky; but the cavity where they work out at, is said to be one hundred and fifty feet from the base and the top of the cliff. The bees are said to be in vast numbers.

I would like to know of any one has ever ascertained the quantity of honey stored by bees similarly situated in bluffs. I suppose there are other instances of the kind. What would be the best plan to take the honey stored in a cliff? If any of the readers of the Bee Journal can give me a plan that will be satisfactory, without danger from the bees; I may at some future time have the pleasure of giving them an account of a big bee hunt.

Wishing you great success, I am, &c., &c.

N. P. Allen.

Smith's Grove, Warren Co., Ky.

The hotter and dryer the summer is, the greater and more frequent are the honey dews. Cold and wet weather is unkind for them. Much rain at any time, as coming from a higher region, washeth away that which is already elevated; so that there can be no more, until another fit of hot and dry weather, and in the end it dissolveth them quite.—Butler.

A farmer near Northampton, Mass., recently took from a swarm of bees that had taken up their abode in the wall of his house, one hundred and twenty-five pounds of honey.

[For the American Bee Journal.]

Buckwheat on Poor Land.

Some thirty years ago when I lived in Canada, I had fat hogs, for I was a miller then, and you know that hog manure is very rich. I sowed a piece of ground with buckwheat for my bees, and on returning from the field, with some buckwheat in my sowing bag, I passed through the hog yard and it looked so nice and mellow that I strewed on the buckwheat, shut the hogs in the pen, harrowed in the buckwheat, and let it grow for the bees. The result was that scarcely a bee touched the field blossoms, but the hog yard beat all for bees you ever saw. Well, I learned a lesson then—that is, if you want honey, the richer the land the more honey you will get.

Now when a person asks me how much buckwheat shall I sow for my bees? I ask him how much manure are you going to put on your land? Manure your white clover patch, currants, gooseberries, raspberries, in fact every tree whose blossoms the bees are to work on. The richer the land the more honey the blossoms will produce. It is useless to sow buckwheat for bees on poor land. I saw a person last summer who had sowed the same piece of land to buckwheat for eight years in succession without manure, and he said for the last three years his bees have scarcely touched it. He concluded that they had got sick of buckwheat. But this year he plowed up his cow yard and sowed to buckwheat, and the way the bees worked on it beat all he ever saw. He took the hint from what I told him last summer. Is not this one great reason why so many people complain that their bees do not do as well as they did when the country was new, before they had skinned the land to death western fashion? This skinning process is as bad for bee-keepers as it is for farmers.

Osage, Iowa. Elisha Gallup.

[For the American Bee Journal.]

When you set out your bees in the spring, set them on the ground by all means. That is, some of my bottom boards have an inch thick cleat nailed on the underside, and some of them a cleat two inches thick. Those cleats, set directly on the ground, have a strip of board or something fixed on the front side, so that when a loaded bee falls on the ground, he can crawl into the hive without any difficulty. Keep all grass and weeds away from the front of the hives, and do not set them in a row close together; but place them around your yard promiscuously, here and there. When set too close together, you are apt to lose many queens, by their making a mistake and entering the wrong hive when they return from the first flight. Before I knew better, I used to lose more or less in that way, every year. Two differently colored hives, side by side, will answer well enough.

Osage, Iowa. E. Gallup.

Dry weather makes plenty of honey, and moist weather of swarms.—Butler.

THE AMERICAN BEE JOURNAL.

WASHINGTON, MARCH, 1868.

☞ THE AMERICAN BEE JOURNAL is now published monthly, in the City of Washington, (D. C.,) at $2 per annum. All communications should be addressed to the Editor, at that place.

Bees and Fruit-Blossoms.

A silly prejudice against bees is entertained by some fruit-growers, based on the notion that the crops of fruit are injuriously effected, both in quality and quantity, by the visits of bees during the blossoming period. A more unfounded notion, or one deriving less support from observation and science, can scarcely be conceived. Yet it regularly looms up once or twice in a century, and creates as much alarm and consternation among the wiseacres, as the appearance of a comet used to do in by-gone days.

Repeated instances of the resuscitation of this prejudice, are presented in the history of bee-culture in Germany, especially in the period between 1530 and 1800. On some of these occasions it was so widely prevelant and so rabid in its demonstrations, as to constrain the almost total abandonment of bee culture in districts where fruit-raising bore sway. To the aid of this came the substitution of cider and beer for the ancient mead or metheglin, as the popular beverage; and amid such opposition and discouragement, bee-culture rapidly sunk to be of very subordinate interest, except in some favorable localities.

In 1774, Count Anthony of Torrings-Seefeld, in Bavaria, President of the Academy of Science at Munich, striving to re-introduce bee-culture on his patrimonial estate, found in this generally prevalent prejudice, the chief obstacle to success. To overcome it, he labored assiduously to show that bees, far from being injurious, were directly beneficial in the fructification of blossoms—causing the fruit *to set*, by conveying the fertilizing pollen from tree to tree and from flower to flower. He proved, moreover, by official family records, that a century earlier, when bees were kept by every tenant on the estate, fruit was abundant; whereas then, when only seven kept bees, and none of these had more than three colonies, fruit was scarcer than ever among his tenantry.

At the Apiarian General Convention, held at Stuttgard, in Wirtemburg, in September, 1858, the subject of honey-yielding crops being under discussion, the celebrated pomologist, Prof. Lucas, one of the directors of the Hohenhiem Institute, alluding to the prejudice, went on to say—"Of more importance, however, is an improved management of our fruit trees. Here the interests of the horticulturist and the bee-keeper combine and run parallel. A judicious pruning of our fruit trees will cause them to blossom more freely and yield honey more plentifully. I would urge attention to this on those particularly who are both fruit-growers and bee-keepers. A careful and observant bee-keeper at Potsdam writes to me that *his trees yield decidedly larger crops since he has established an apiary in his orchard, and the annual product is now more certain and regular than before*, though his trees had always received due attention."

Some years ago a wealthy lady in Germany established a green-house at considerable cost, and stocked it with a great variety of choice native and exotic fruit trees—expecting in due time to have renumerating crops. Time passed, and annually there was a superabundance of blossoms, with only very little fruit. Various plans were devised and adopted to bring the trees into bearing, but without success, till it was suggested that the blossoms needed fertilization, and that by means of bees the needed work could be effected. A hive of busy honey-gatherers was introduced next season; the remedy was effectual—there was no longer any difficulty in producing crops there. The bees distributed the pollen, and the *setting* of the fruit followed naturally.

As a further illustration of this topic, we are pleased to be able to lay before our readers the following letter from Mr. Packard, one of the editors of the *American Naturalist*, with which we have been obligingly favored by the gentleman to whom it was addressed. We trust it may contribute to prevent fruit-growers from doing themselves harm, as they assuredly will do if they allow their prejudices to give a wrong direction to their zeal:

ESSEX INSTITUTE,
SALEM, MASS., *Jan.* 31, 1868.
JOHN J. GOULD, ESQ.

DEAR SIR:—In answer to the question whether bees are in any way injurious to fruit, or lessen the quality or quantity, I would reply that all the evidence given by botanists and zoologists who have specially studied this subject, shows that bees increase the quality and tend to improve the quantity of fruit. They aid in the fertilization of flowers, thus preventing the occurrence of sterile flowers, and by more thoroughly fertilizing flowers already perfect, render the production of sound and well developed fruit more sure. Many botanists think if it were not for bees and other insects, *many plants would not fruit at all*.

This whole subject of the great office which bees and other insects perform in the fertilization of plants, has been fully discussed in the May, July, and October numbers of the *American Naturalist*, and by Prof. Asa Gray, in the *American Agriculturist*, beginning in May, 1866.

It is alleged that bees do injury in some way by extracting the honey from flowers. What is the use in nature of honey? The best observers will tell you it is secreted by the plant, for the very purpose of attracting bees to the flower, otherwise it is of no use to the flower or fruit.

If all the bees were to be destroyed, I for one if a farmer, would prefer to go into some other business.

This prejudice against bees seems to us to have no foundation. Known facts prove the contrary. Farmers know too well the injury noxious insects do; it is more difficult to estimate the good done by hosts of beneficial insects.

I believe that every intelligent bee-keeper and naturalist will assent to the truth of the above remarks. Yours very respectfully,

A. S. Packard, Jr.

Spring Feed for Bees.

For stimulative feeding in the spring, or where weak colonies need aid, the Rev. Mr Sholz recommends the following, in the *Bienenzeitung*: "Take two parts rye-meal, two parts crushed or pulverized loaf-sugar, and one part liquid honey; add a little warm water, and knead the whole to a stiff doughy mass. Spread this thinly on a piece of coarse linen or muslin, and lay it on the frames of movable comb hives, directly over the place where the bees are clustered. Spread over this a piece of woolen blanket or flannel, large enough to confine the bees to the hive below, and lay the honey-board loosely thereon. —Make an examination once or twice a week, and add further supplies when needed, till spring opens and the bees can provide for themselves. When coarse linen or muslin cannot be had, on which to spread the mixture, take some finer fabric and draw out every third thread of warp and woof, so as to make the food easily accessible to the bees. By this process colonies can be furnished with rye-meal and other nutriment, without exposing the bees to chilling winds, or attracting unwelcome and officious visitors from neighboring apiaries. Colonies deficient in stores may thus be supplied at any time; but pure stimulative feeding, to induce breeding, should not be resorted to before the middle of April. For this purpose diluted honey should alone be used, in moderate doses, administered every other evening, and continued only about three weeks, unless the spring is unusually backward."

* * *

In the *Bienenzeitung* No. 12, for 1867, the Rev. Mr. Köhler announced that he had discovered a process to prevent Italian queens from having concourse with common drones, and securing their fertilization by Italian drones exclusively. Subsequently in No. 21, Mr. George Summer stated that the secret had been confidentially communicated to him, and that he had tested it on six occasions with uniform and complete success. And now in the *Bienenzeitung* No. 24, for December 20, 1867, which has just been received, the Baron of Berlepsch says that the process has likewise been communicated to him and Prof. Leuckart, and that it can be employed with ease and is perfectly reliable—not only securing purity of progeny in every case, but rendering improvement attainable, since both the queens and the drones to be bred from, can be selected.

As Mr. Köhler is poor, with a large family to provide for, he has been advised not to give publicity to the process until assured of adequate pecuniary compensation for a discovery so important and valuable. It is expected that this will be granted by either the Prussian or the Bavarian Government, or by the contributions of individual bee-keepers in Germany. ☞ We have taken measures to ascertain on what terms it can be made available in this country, and will in due time make known the result.

* * *

We are pained to learn that Professor Varro, of Washington, Pa., died about a month ago, after a brief illness. His last letter to us is without date, though postmarked January 14. It contains no intimation or indication of impaired health, and we were hence entirely unprepared to hear of his decease.

* * *

☞ We have still on hand a number of communications intended for this number, for which we were unable to make room:—among them one from Messrs. Langstroth & Son, respecting the "*Honey Emptying Machine.*" As the BEE JOURNAL is stereotyped, the forms have to be made up sometime in advance of the publication day, and we cannot make alterations or substitutions, however desirable, which would otherwise be practicable.

Wisconsin Bee-keepers' Association.

EDITOR BEE JOURNAL:—The Wisconsin Bee-keepers' Association held its third annual session in the rooms of the State Agricultural Society, in the Capitol, at Madison, on the 14th of February, 1868. Business of interest was transacted, and among other things it was decided to hold an annual meeting on Wednesday of State Fair week—notice to be given in the daily programme and by bulletins on the ground.

The following-named persons were elected officers for the ensuing year, viz:

JAMES BULLARD, of Evansville, President.
B. S HOXIE, of Cooksville, Secretary.
A. M. HART, of Stockbridge, Treasurer.

The following resolutions were offered, and unanimously adopted:

1. *Resolved*, that the movable frame is indispensable to complete success in bee-culture; and to the end that the colony may be more fully under the control of the apiarian, it is quite essential that the frames be adjusted without *blocks*, *pins*, or hooks, as to their relative distance from each other.
2. *Resolved*, that in our opinion some suitable *permanent* house or protection for bees in winter, is more economical than an outdoor exposure.
3. *Resolved*, that artificial swarming is indispensable to success in practical bee-culture.
4. *Resolved*, that close proximity of hives is injurious to the bee-keepers.

No further business being presented, the Association adjourned, to meet as above indicated.

B. S. HOXIE, Secretary.

COOKSVILLE, Feb. 14, 1868.

[For the American Bee Journal.]

Inquiries: Size of Hives.

My bees have been quite a source of profit this year; sixty-five hives paying over *seven hundred dollars*, besides labor and expenses. I attentively read your BEE JOURNAL, and think I learn much not laid down in books.

I would like to ask the following questions.

In a section of country where there is little or no buckwheat honey to store in the fall, is it not better to make the hive larger than 2000 cubic inches in the clear—say about 2400 in Lat. 43.?

In a hive only ten or twelve inches high, is it not best to give more room, than in one fourteen inches high in the clear?

I have more questions to propose; but enough for the present. D. C. B.

GOWANDA, N. Y.

Those hives that soonest rid their drones, are likely to be forwardest next year.—BUTLER.

[For the American Bee Journal.]

Size of Hives.

DEAR JOURNAL:—Appreciating the liberality and freedom extended to your correspondents, I take the liberty to make some remarks in answer to the "Queries of Querist," in regard to size and form of hive.

While I frankly acknowledge that I have a *Bee Hive* to sell, I trust *that* does not materially affect my judgment. And, as only those who have experimented largely with a view to obtaining a hive adapted to the wants of the bee keeper, and not inconsistent with the instincts of the honey bee, can answer the queries of Querist, I trust that what I may say will not be passed by without consideration.

In the latitude of western New York, with only a short honey season, a hive containing less than two thousand inches would be unsafe, unless in the hands of experts, and, so far as my observation extends, the same will hold true in most sections of the northern States.

The form of the hive, and the protection afforded by it, the length of the honey season, and the manner of wintering, will enable this estimate to be modified in special cases, perhaps, to advantage. In the form of a hive certain points may be gained. If, for instance, it is desirable to have the bees cluster between all the combs containing honey for their support in winter, it may be accomplished by using only seven large frames. If desirable to have all the honey in one place and above the bees in winter and not at both ends of the hive, triangular frames with one corner pointing up will accomplish the desired result. If straight combs with winter passages in them are desirable, frames in the form of a letter A, the cross bar being triangular and the side pieces of the same form, will ensure them. If it is desirable to concentrate the heat generated by the bees where the honey for their winter use is stored, instead of diffusing it over broad upper surfaces, and in remote corners, a sharp top hive will accomplish this as well.

If it is desirable to place spare honey boxes on a hive after hiving into it a large swarm of bees and yet not have brood deposited in them, a triangular hive, having the boxes arranged on the inclined sides will never fail.

If eight shallow, six pound supers are necessary to accommodate a vigorous stock of bees in the height of the honey season; and it is not desirable to spread out the hive beyond the number of combs between which the bees would cluster in winter, they may be arranged as above. If an old stock of bees will not accept spare boxes unless they are shallow and in close proximity to the brood, the upper inclined sides of a triangular hive will admit them of that form and in the desired position.

If the breath or warm air found in bee hives does not condense or form dampness, except when brought in contact with a cold surface, a sharp top hive having dry chaff packed closely on all sides except the bottom, will remain dry above the bees without upward ventilation.

These conclusions have been the result of years of patient study and successful experiment, and while given without reasons have been thoroughly demonstrated.

The queries suggested by Querist, are of great importance, if we would make bee-culture both practical and profitable, and are deserving of as much consideration by the *majority* of the readers of the JOURNAL, as the exact shade seen in the third "golden circle" of doubtful, or otherwise, Italian Bees. T. F. BINGHAM.

ALLEGAN, MICH.

[For the American Bee Journal.]

Alsike Clover.

MR. EDITOR.—Many bee-keepers have complained of being humbugged in buying seed of the above-mentioned plant, which proved to be nothing but common white clover, &c. In justice to Messrs. Thorburn & Co.'s advertisement, on last page of the BEE JOURNAL for February, I would say that I procured seed from them two years ago, and that last season it bloomed beautifully, the blossoms being a variegated mixture of white and red, and so much an ornament that they were shown as a floral curiosity to our friends. Bees were incessant y at work on them at all times.

We have found Messrs. Thorburn & Co.'s seeds in general quite reliable.

Respectfully, your old friend,
NOVICE.

[For the American Bee Journal.]

Wintering Bees in Cellars—Its Advantages and Disadvantages.

There are but few cellars well adapted to wintering bees successfully. The cellar should be dry, dark, and well ventilated—the ventilators so arranged as to exclude all light, and the draft so arranged that it can be governed according to circumstances. The temperature should be kept as near 36 degrees as possible. The hives should be elevated some distance from the floor, with the entrance or fly hole open, and freely ventilated at the top, so that all dampness caused by the breath of the bees may escape; otherwise the combs will mould. Box hives in which upward ventilation is not practicable, should be inverted and left uncovered.

The advantage of wintering in the cellar is that one-half less honey is consumed than when wintered in an unprotected place. If properly cared for, no swarms are lost and but vew few bees die.

The disadvantage is that they will not breed as rapidly in the latter part of winter and early spring in the cellar, as out in the open air.

Too high a temperature will cause restlessness, and if there is any light they will fly to it. If under these circumstances they are shut in the hive they rapidly become distended with fæces, soil their hive, consume honey inordinately, and contract disease. WM. W. CARY.

COLERAIN, MASS.

[For the American Bee Journal.]

Alsike Clover.

MR. EDITOR:—I have noticed in the JOURNAL a number of plants recommended to be cultivated for their honey-yielding qualities. Now I think the Alsike clover is just what we want, it being one of the best honey-yielding plants that we have, and the honey gathered from it is very thick and uncommonly pleasant. The bees, both Italians and black, gather honey from it as readily as from our common white clover.

It is also one of the most profitable crops that farmers can possibly grow for seed or food, or for both. On page 96, November number of the BEE JOURNAL, is an article on Alsike clover taken from the *Canada Farmer*. The small field of 3½ acres referred to in it, belongs to me. From it I secured twenty loads of hay, and from three-fourths of an acre adjoining it, I obtained four loads more—making twenty-four loads from four and a quarter acres. I saved the whole for seed, and have just threshed it. It yielded me 33½ bushels of beautiful seed, or about eight bushels to the acre. The seed sells here readily at eighteen dollars per bushel, or thirty cents per pound, making the snug little sum of six hundred and three dollars for the seed crop alone, or about one hundred and forty-one dollars per acre! And the hay, since it is threshed, I think as good as red clover hay. My horses and cattle eat it up readily and clean.

I think this clover will make a revolution in bee-keeping in this section, for my neighbors are all intending to sow some in the spring. Nearly the half of my stock of seed is already engaged. Some design to sow it to cut for seed, and some to cut for hay. Others intend it for pasture. There will consequently be no lack of bee pasturage in this neighborhood; and I hope there may be no lack of bees to visit the fields, where the blossoms supply so valuable a luxury. H. M. THOMAS.

BROOKLIN, CANADA WEST.

[For the American Bee Journal.]

Questions.

No. 6. To what extent can one stock of bees be increased, artificially, in six months, with care and feed sufficient? And what quantity of sugar will it require for the same? The figures are wanted to see that it will pay. See vol. 2, No. 9, page 165.

No. 7. What portion of pure Italian queens, mating with black drones, will produce black workers; and, if any, what numbers of each queen will be black?

No. 8. Do pure Italian bees sport in color like the blacks?

No. 9. Bees carry honey from the hives to moisten flour with, when fed in the spring, to make the pellets and make them adhere to the baskets. Do they have to moisten the pollen, or is it naturally sticky enough to suit them?

JAY MONROE.

AMERICAN BEE JOURNAL.

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[From the Hanover Central Blatt.

Practical Bee-Culture.

Can the brooding chamber of moveable comb hives be kept free from drone comb without regularly cutting it out? And how are cottage hives to be managed in this respect?

These are very important questions, which have been warmly discussed, and may lead to further debate. But when the purpose is to ascertain and determine useful processes, it is well not to shrink from ardent controversy; which, in the case of bee-keepers, may indeed be attended by a few stings, but draws no blood. I will, therefore, venture to defend a practical process, which I have found useful and important.

It is well known that in some districts bees are much more inclined, than in others, to build drone comb and rear drone brood in spring and early summer. Why this is so, I shall not here inquire, contenting myself with noticing the fact, and observing, too, that the Italian bees are less inclined to do so than the common black bees, and are therefore to be preferred.

If in my locality the bees were allowed free scope in their propensity to build drone comb, the cells would be sooner or later supplied with eggs, and the result would be the production of such *masses of drones* that we could never calculate on securing any surplus honey. Drones are notoriously not producers, but consumers of honey. They gather none, but simply live on that gathered by the workers. Hence the more drones a colony contains the less honey may it be expected to produce; and drone comb situated in a hive where it may serve as brood-comb, is decidedly disadvantageous and injurious.

But drone-comb is injurious only in the brooding chamber. Where, on the contrary, honey is stored, drone-comb is not disadvantagous, but rather beneficial, inasmuch as the larger sized drone cells will contain more honey, and their construction involves less labor and a smaller expenditure of material. In hives containing a separate storeroom for the deposit of honey, and from which the queen is excluded, bees may be allowed to build drone-comb freely, because there it will be useful rather than otherwise. Drone-comb which happens to be built in the brooding chamber, should also be transferred to the storeroom—thus removing it from where it would be injurious, and placing it where it will be beneficial.

Now, how is the object aimed at to be most easily accomplished? We all concur in the conviction that it is of the utmost importance to keep the brooding chamber free from drone-comb. They are two modes by which the desired result may be secured. The one, which may be called the *old* method, consists in persistently cutting out the drone-comb as regularly as it is built, and so long as it is built. This is the method employed by those who keep bees in cottage hives, and is the proper method for such hives. The second or *new* method is available only when movable comb hives are used, and is based on this fundamental principle, not to permit bees to build comb in the brooding chamber, so soon as they begin to build drone-comb; but to insert therein immediately frames containing empty worker-comb, and transfering to the storeroom or surplus boxes any drone-comb which may have been built.

The question now recurs, which of these two methods is most advantageous in practical bee-culture? Where cottage hives are used, the first method is the only one that can be employed; but those are evidently wrong who regard it as the most profitable also, because they are thus enabled to sell a proportionately larger quantity of wax. It is undoubtedly true that he who has much wax to sell can realize a handsome sum of money. Nevertheless, I cannot but regard the wax production and wax selling incidental to cottage bee-culture, as an unavoidable evil, and by no means as an advantage.

This leads to another important inquiry: Can the old method, or the regular cutting out and removal of drone-comb, be recommended as advantageous to those who employ movable comb hives? Because of its importance, let us examine the matter a little more closely, and investigate in what relation comb building stands to the consumption of honey, and what are its effects on the progress of the colony as regards the production of brood and the accumulation of stores.

Stock feeders make a distinction between the food required simply for the sustenance of the animal and that required for the production of fat. The former is only what is needed for the support of life; the latter is that additional quantity which every animal doomed to labor or designed to be fattened must consume. The case is precisely similar in bee-culture. During the winter, the period of rest and repose, extending, perhaps, from the beginning of November to the close of February, bees consume comparatively little honey, because then nature designs the mere preservation of life. But so soon as activity is resumed in the hive, when brooding recommences, and in proportion as it increases, the consumption of honey is inhanced. But consumption reaches its acme when, in addition to enlarged brooding, wax—which is the *fat* of these insects—has to be liberally supplied by them for comb building ; and bees thus engaged are the largest consumers of honey. Repeated experiments and investigations have shown that, for the production of one pound of wax, from ten to twenty pounds of honey are consumed. This result is indeed much modified in practice by the influence of various circumstances ; but the general fact that bees consume most honey when engaged in comb building is universally conceded.

The experience of every observant practical bee-keeper corroborates this statement. Place one swarm, in the spring, when the weather is favorable and pasturage moderately plenty, in a hive furnished with empty worker comb ; and another in an empty hive, and you will find a very decided difference in the progress they make. Let the weather after a while become unpropitious, and the latter colony may need feeding to keep it from starving, while the former has quite a sufficiency of stores—and this, though both have been equally industrious in outdoor labor, and carried in equal quantities of honey. The reason of the difference between them is simply this, the latter had to build combs, and was constrained to convert into wax nearly all the honey it had gathered. Where movable comb hives are used the difference can be rendered more palpable, by supplying one colony with frames filled with empty comb, and requiring another to build all the comb it needs.

The difference is still greater and more obvious when pasturage is very abundant, because then usually the construction or enlargement of combs cannot be made to keep pace with the supplies gathered, and requiring storage room. I have known an instance where a colony regularly supplied with empty combs as fast as needed, had stored five times as much honey at the close of the season as another equally strong, which had to build its own comb ; and after making due allowance for the empty combs furnished, the yield was still fourfold greater. In my practice formerly I used sectional cylindrical straw hives. These hives enabled me to remove the sections containing empty combs, and reserve them for use the ensuing season. If then, at the height of the gathering season, I removed the cover from one of my hives and supered one of these sections, and gave to another colony an empty section, the difference in productiveness between the two was speedily seen. Commonly those who use cottage hives, set an empty section or box under when the bees have filled their hive, if forage is still plentiful. If they were able to supply their bees with empty combs at that time, the yield of honey would be three or four times as great in the same period.

These investigations and facts show :

First. That bees require a great deal of honey when building combs ; and

Secondly. That colonies which are constrained to build comb during the honey season, will make much less progress in the production of brood and accumulation of honey, than those which are supplied with empty combs.

This is quite natural. A farmer who would have to build a barn during harvest to receive and shelter his grain, would need many more laborers to enable him to get through with his work, than one who has a barn ready built before harvest begins. But the system of cutting out drone-comb results in proportionately much greater injury, for here the bees do not construct their combs to serve as receptacles for brood or honey, but literally to be appropriated by the pruning knife of the bee-keeper. The honey used, the time spent, and the labor bestowed, are all consequently a dead loss to the bees themselves. The work is a sort of Sisyphian labor, never ending, still beginning.

It is hence evident that the regular removal of drone-comb in cottage hives is only to be regarded as a necessary evil. It resembles the subduing of a weed which we cannot extirpate, but which we have to mow down frequently to prevent it from running to seed and producing still more extensive injury. But if, in using cottage hives, we were able to adopt the method employed where movable hives are used, that is, if as soon as the bees begin to build drone-comb, we could at once supply them with empty worker-comb, and thereby prevent the construction of worker-comb in the brooding chamber, we should secure the following advantages :

First. The bee-keeper would be exempted from the arduous and disagreeable labor of daily removing drone-comb.

Secondly. The bees would not have the task imposed on them of replacing daily the drone-comb thus removed, but could, instead, save and store up the honey needed for the production of wax, and devote their time to more useful labor.

Thirdly. The worker-combs thus inserted would in the usual course be supplied with worker-brood ; the colony would thus more speedily become populous, than where drone-comb is daily pruned away and daily rebuilt; and the labor of the bees is thus turned in a more profitable direction.

But unfortunately the insertion of worker-comb is, in cottage hives, unfeasible, and there is consequently no alternative, where such hives are used, but to resort to the regular removal of drone-comb as fast as it is built, and in this way of two evils to choose the least.

The case, however, is totally different where movable comb hives are used. Where the combs can be changed or moved from place to place, and the brooding chamber separated by a partition from the store-chamber, we have it in our power to keep the brooding chamber entirely free from drone-comb, without having recourse to the pruning knife. This position, assumed and maintained by me years ago, has been attacked and opposed by several eminent bee-keepers. They admit the advantage accruing from keeping out drone-comb without the use of the knife, but deny that it is possible to do so under existing circumstances; and it will be my task to show that the thing can be done.

It might, perhaps, suffice to say that *what has been done*, and *is still done*, *must be possible.* In my apiary I have for some five years past kept the brooding chamber of my hives altogether free from from drone-comb, without ever using the knife. I have succeeded in accomplishing this, not only with Italian bees, but with black bees also. Even this year, when in consequence of large sales of Italian bees, I was compelled to buy nearly a hundred swarms of black bees, I have still been successful in this matter. Hence, that which is practicable in the hands of one individual, must certainly be possible, even though not every one can accomplish it.

Those who seek for information and instruction, as well as those who controvert my position, will, doubtless, be ready now to propound the inquiry: "How are we to proceed in order to keep the brooding chamber free from drone-comb, without recourse to the pruning knife?" My process is quite simple. So long as the bees build worker-comb I let them build. But so soon as they begin to build drone-comb, I do not permit them to build in the brooding chamber, but insert full sheets of empty worker-comb. If any drone-combs have in the meantime been built, I remove them at once and use them in the honey chamber, between which and the brooding chamber I introduce a division board. Having then their brooding chamber fully supplied with worker-comb, the bees have no room there for the construction of drone-comb. In due time I give them admittance to the honey chamber, where they may build drone-comb if they choose to do so, because it can do no injury there, but is on the contrary rather advantageous. Such, on the whole, is my mode of proceeding, which certainly, it seems to me, is simple enough, and easily comprehended.

It may, indeed, be objected: "All this is very fine, but where do you obtain the required full sheets of empty worker-comb, which you need for filling out the brooding chamber?" This is undoubtedly the puzzling question, which many find it difficult to solve; and I therefore subjoin a brief elucidation of the manner in which I manage so as to provide a supply of worker-combs. In the first place I never melt up any combs while they remain in a condition to be acceptable to the bees; and in the fall all the combs I have on hand are carefully assorted, the worker combs being selected from the drone-combs, and each of these again separated into classes so as to have full combs, half finished, and quarter finished combs, in distinct lots. Thus assorted and arranged, they are placed for the winter in two chambers, in which I keep my apiarian implements and apparatus, and which are large enough besides to receive 3,000 full built frames. Some of the combs containing honey are reserved for spring, and others are emptied by means of the centrifugal honey extractor. When the spring opens, and the bees begin to work, I avail myself of every opportunity to let them build worker-combs, or to complete the half finished or quarter finished combs on hand. Not much, however, can be accomplished in this way before the swarming season, and the bee-keepers must, therefore, strive to turn that season and the period of making artificial colonies to account. I never give a swarm full built combs, but only such as are partially built up, and I generally secure four full built worker-combs from each. As soon as a swarm begins to build drone comb, I stop that work by removing the combs containing drone cells and inserting full worker-combs instead, and then filling out the brooding chamber with such.

A chief means of obtaining full built worker-combs is this, to remove from colonies that contain full combs, and are in a condition to build worker-comb, all the full combs which have no brood, and insert partially finished worker-combs instead. Every after-swarm, and every artificial colony containing a young queen, will be in such a condition, so soon as the young queen is fertilized and begins to lay. The bees will then build worker-combs exclusively, and advantage must accordingly be taken of this their propensity at the time. All full built combs should at once be removed and reserved for future use, and frames with worker guide comb or unfinished worker-comb be substituted. By this means I not unfrequently obtain more full built worker-combs in a brief period during and after the swarming season than I subsequently find it necessary to return. Before the invention of the honey comb emptying machine, I used to razee the cells on each side of the comb, cutting them down close to their foundations, thereby securing the honey and some wax, and and reinserting the razeed combs in the hive where the cells were quickly rebuilt by the bees. I also made considerable use of artificial comb foundations made of wax. Artificial combs, having cells of nearly full depth, I have found too costly, and of little use, as being rude imitations which the bees would reject or reconstruct.

DATHE.

Some country yieldeth one fruit, and some another; some beareth one kind of grain, and some another; some breedeth one kind of cattle, and some another; so there is no ground, of what nature soever it be, whether it be hot or cold, wet or dry, hill or dale, woodland or champaigne, meadow, pasture, or arable, in a word, whether it be battle or barren, which yieldeth not matter for the bee to work upon.—BUTLER.

[For the American Bee Journal.]

The Vexed Questions.

Mr. Editor.— * * * * *

The war of words to which I refer is mostly waged over two subjects, to wit: *bee hives* and the *purity of Italian bees*—either of which is a topic worthy of being discussed with less exhition of temper, for there are none of us so very wise in these matters as to do any more than "boast we know." Yet, in the face of this deplorable fact, some of your correspondents talk as if they were the only qualified judges in either case of what constitutes the *true standard of perfection*, and proceed to set up their *tests* and *points of excellence* as if by an infallible decree. We only wish that they were as wise in these matters as they would have us think they are, for then we should have a starting point. Whereas now, with all the light these great luminaries in apiculture reflect, we are still looking and hoping for something more tangible to guide us.

"Give me a *place to stand*," said Archimedes, "and I will move the world!" So give us, gentlemen, one single *fact* upon this question of *purity*, adapted to *all parts of the country* and good *in all kinds of weather*, and we will let you shout "*eureka!*" the remainder of your days. I have no learned quotations to make from the dead languages for the benefit of my punctilious friends, but I will honor them with one from a *world renowned* volume and a living author. Here it is: "Mankind has been learning for six thousand years, and yet how few have learned that their *fellow beings* are as good as themselves." *Dr. Ayres' Almanac*, 1868, *October page, paragraph* 3.

As this question of purity of Italian queens has assumed a new aspect, from the late importations and observations of Mr. Grimm, I will say, for the benefit of those who do not profess to be experts in judging of *blood*, that it is to the *hybrid progeny* of a queen that they are to look for the safest *test of purity*. For instance, if you get a queen which reproduces queens, that in turn, after copulation with a black drone, produce bees a larger proportion of which are *light colored and have three yellow bands*, you can safely conclude that the *grandmother* of *such hybrids* is pure enough for all practical purposes, let her *daughters* be of what color they may.

Mr. C. T. Adams, in the January number, asks if it makes any difference in raising queens from *worker* eggs, whether they are in *new* or *old* comb?

I will answer him that my experience is decidedly in favor of new comb. As I have not time to speculate upon the cause of his bees failing to raise queens, I will give him the benefit of my method, which I have *never known to fail.* I take a standard hive and place in it, on one side, a comb containing eggs and larvæ from the queen I wish to propagate from, I then take the hive with its comb to a stand having a *strong swarm.* This I open and take from it an *outside* frame containing *honey only* in the comb. I place this comb next to the one containing the eggs and larvæ. I then take frames from the *centre* of the hive containing the strong swarm, and, with a wing, brush a good supply of *young bees* from the combs of the strong swarm into the nucleus hive. I then adjust the frames, and set the *nucleus* on the stand of the *strong swarm*, which I remove to a goodly distance.

In this way I have never failed to get from six to ten splendid queen cells; and in case *drone*-brood is inserted in the comb, the bees will generally build as nice worker-comb as if they had a fertile queen. My practice is, after the cells are *capped* to remove all but one; and when the queen hatches and *become fertile*, I build up the nucleus to standard strength with *brood* from other hives.

Osage, Iowa. G. A. Wright.

[For the American Bee Journal.]

Size of Hives.

A Querist, on page 128 of the January number of the Journal, doubts the size of hives being best, as given by Quinby and Langstroth. I wish he had given us his objections, if not his name; we might perhaps have learned something. Quinby and Langstroth would have been wiser, I am quite sure—provided Querist had demonstrated beyond a doubt, that his new position with regard to size, is better than theirs. Whatever his favorite size may be, I will give my reasons for accepting the size given us by the above named apiarians, as good enough at least; and also some reasons why either a larger or smaller hive may, and often does, prove a failure to some extent, in comparison with such as have up to this time been most approved.

I find that a movable comb hive containing two thousand cubic inches, contains also about seventy-two thousand worker cells, when filled with comb. These cells will contain fifty pounds of stores when filled, more or less; but, as we wish to use a portion of these cells for breeding purposes, we will substract from the above number of cells twenty-eight thousand eight hundred, which is two-fifths of the whole number, and which keep the colony constantly populous, as from twenty to forty thousand bees are, I believe, regarded as a good swarm. This will also enable them to cast one strong swarm each year in due season, and enable them to lay up ample winter stores, and yield a surplus when the season is favorable for honey gathering. For their numbers increase very rapidly from the last of March to the middle of June, and they are found at this latter date to number more than twice forty thousand. In the time given and the number of cells allowed they will raise three crops of bees, and increase their numbers to eighty thousand four hundred. In many cases they will, at this season of the year, use a larger number of cells, at least in rearing the third crop of bees given them above, and consequently be more populous. Now, I presume all will admit that they do not die at this season of the year in numbers corresponding with the number hatched. If we admit the loss of one-fifth the whole number bred, from the last of March to the 15th of June, we have yet bees enough left to constitute two good colonies. We will now divide the bees equally, and leave the remaining number to store the remaining three-fifths of the seventy-two thousand cells, (being forty-three thousand two hundred). This number will contain thirty pounds of honey, which is sufficient to winter the colony safely. But they will also, in districts where full forage abounds, fill with winter supplies quite a number of cells used for breeding purposes, thereby adding largely to the above amount, and which will winter the largest colony through the most protracted winter and backward spring. They will also store a large amount of surplus honey, as has often been proved, and which we of course desire them to do, as otherwise they would not be profitable to us. We also want surplus honey to be stored in receptacles fitting it for market in the very best and most saleable condition, and not in the breeding combs, as that is not of the best quality to command the largest price. Now, if Querist wishes surplus honey alone, and not an increase of colonies, then he may add from two to four frames to his hive, thereby increasing the room to be used by the queen. He will then have many bees in one hive, and if he prevents them from swarming, and will furnish them with boxes containing comb, to induce them to occupy them, his surplus will be larger than from a smaller hive. But his extra amount of surplus honey will not bring him as much profit as he would have obtained from one good swarm, and the surplus from the parent stock in the other case.

Still Querist may say that in a Langstroth or Quinby hive of 2,000 cubic inches, bees will increase from the 15th of June to the 1st of August, so that they will swarm again. Well, if they do, and my object is surplus honey and not an increase of stock, I will open the parent hive and destroy all queen cells, and turn the swarm back again. At the same time I will give them boxes partly filled or containing empty comb, which they will fill if forage abounds; and if it does not, then a large hive would be no benefit either to them or myself. Neither would the late swarm be of any value, as it would perish from want of stores. A hive smaller than the size recommended by Quinby and Langstroth will contain less bees at almost all seasons of the year; and if its combs are used in the manner I have described, they will not have the requisite amount of cells in which to rear young. If their number fall much short, there will not be at any time enough to form two good colonies; and if you take many over half their number from them for a new colony, then you weaken the parent stock too much to store a surplus of honey.

Again, with a larger hive it is always later in the season before it becomes sufficiently populous to cover all its combs. Consequently we get a later swarm from it, which is not desirable; and at the same time we get but little surplus honey.

Now, Mr. Editor, I believe I have proved that a hive as recommended by Quinby and Langstroth, with regard to size, is at least a safe hive to keep bees in. And if *Querist* can give another or better reason for using a hive either smaller or larger than 2000 cubic inches, than I have given for using such dimensions, it will be necessary for him to prove that a less hive will cast one good swarm each year and yield more surplus; or that one of a larger size will become populous to overflowing with numbers and also cast an early swarm, and at the same time give a larger amount of surplus to its owner—otherwise I cannot consent to adopt his kind of hive, as regards *size*.

With regard to the *shape* of hives I will not at this time say more than that I am satisfied with the frame hive as made by both Quinby and Langstroth; the difference between them being but trifling. If I were to select a taller hive, I should prefer that made by Mr. J. H. Thomas, of Brooklin, Canada West. But as I am perfectly satisfied with the Langstroth hive, I shall not think of exchanging it for any other at this time. I much admire the arrangement of the bottom-board of Mr. Thomas' hive, which is so arranged as to be dropped down at the back part of the hive, and is easily returned without in the least irritating the bees. But for a large amount of room on top, to place the surplus honey receptacles, I cannot find any so well adapted as the Langstroth hive. I also succeed very well in wintering bees in the open air, when I fill the cap with corn-cobs. Its frames are very easy to handle, as it is not a very deep hive. Those of the Quinby and the Thomas hive are somewhat deeper—Thomas' being still deeper than Quinby's; yet it is not as far out of reason as some others, and may prove a very good hive, if not too expensive as regards construction. There are other hives, the shape of which I do not like at all. Neither do I like their construction, as some of them are so modified from the original frames, as hardly to be frame hives at all, being nearly unmanageable. Some others again, that have lately been presented to the public, I cannot say anything of, for or against, as I have not seen them. But some one will think I am getting on patent ground, where I should speak with great caution. So I will pass those hives for the present.

GODFREY BOHRER.

ALEXANDRIA, IND.

[For the American Bee Journal.]

An Improved Breed!

DEAR EDITOR:—I am sometimes much amused when I read your very valuable paper, which I would not do without, indeed, if it would cost five times its price. If I can be admitted into your family of bee-keepers, I do not care whether you call me second cousin, or brother, or what, provided I can have the benefit of all the exchanging of thoughts, back and forth, done in the family. But should this come before the public, I presume our naturalists will soon see that I am a young brother in the family, young in age, and also young in writing, having never written articles to be published.

We are doing a noble work, if only our senior brethren do not go too fast in improving the Italian queens, or that race generally. I have purchased three or four full-blooded queens of that race, and thought when I got them to have the three yellow rings, I had reached the point, having laid out seventy or eighty dollars already. I have set my wits to work, and a new plan strikes me, whereby I may keep up with the rest of you. My queens produce three-ringed workers. Now, I shall have drones with at least two of the yellow rings; and don't you see I am going to let those drones pair with the three-ringed queens next year; and don't you know that the two and three make five yellow rings on their progeny? And will I not thus be ahead of some of you? And after that I am going to add a half-blooded Egyptian drone to my stock; which will then come out five rings double-blooded Italian and half-blood Egyptian. If I am mistaken in this, I am willing to have the mistake pointed out, as I am truly

A. Philomath.

[For the American Bee Journal.]

The Best Form for Hives.

In answer to "questions" by Querist, on page 128, current volume, I gave in a former number my views of the "best size" for a hive. I will now say what I consider the "best form." The length and width of a hive measured inside of the frames, should be nearly equal, which would make the box a little longer than wide. The depth of the hive should be about one-fourth more than the length. The bottom board should incline a little, to aid the bees in removing dead bees, &c. It should also be so constructed that it may be dropped at the rear of the hive, for the purpose of hiving and cleaning in the spring.

The following is the inside measurement of the box of a frame hive, which I prefer to all others; 12 inches wide, 14 inches long, 16¼ inches deep in front, and 14¾ inches deep at the back. This size and shape allows eight frames of the following dimensions inside, measured through the centre each way; 12¾ inches by 13½ inches. The depth of the frames, of course, being 13½. Making a trifle over 2,000 inches comb capacity. I consider such a shape the nearest approach to the requirements of the bee that we can get, as it allows the bees to form themselves into a natural cluster, and one best adapted to secure the most heat in winter. Being about equally distant on all sides from the walls of the hive, no one side of the cluster is more exposed to cold than another. This form also gives sufficient depth of comb to allow the bees to store a large portion of their winter supplies at the top of the hive, where it is always warmer, and hence more readily reached in cold weather; while the distance to be travelled by the bees to reach the surplus boxes in this form of hive, is so little more than a shallow one, that the difference is of no account whatever. This form, if otherwise properly constructed, also ensures straighter and more even combs than any other, and that, too, without the use of "guide-combs" or "comb-guides." Again, I consider this form of combs (nearly square) the most easily handled in the various operations with the bee; while the hive in its outward appearance is symmetrical, and highly ornamental to a well-arranged lawn.

I do not believe that climate should have anything to do with the size or form of a hive. I believe the size and form I have given, to be adapted to all climates; and, other things being equal, will show as good results in the production of surplus honey as any other; while, in other respects, it is, in my opinion, superior to any other form. It will be understood that with this form of hive it is desirable to use a double tier of boxes; and as the bees fill the lower tier, raise them and place the upper tier under. Bees will readily work in a second box if this plan is followed. A free entrance also should be given to the boxes, and the honey board should never be over ¼ inch thick; and only ¼ inch space between the frames and honey board should be allowed. The passage through the honey board to each box, should be from two to three inches square. With this construction the bees in the boxes are not detached from the bees in the body of the hive.

J. H. Thomas.

Brooklin, Ontario, Canada.

[For the American Bee Journal.]

Give every one his due.

Mr. Editor:—I have been noticing the movements, and dodgings, and quibblings of the different bee-hive manufacturers, and their friends. And from all that I can gather, I must think that our brother bee-keepers are on the track of improvement, because they are willing to criticise and be criticised. For while one attempts a blow of criticism, the other throws blood, thunder, and wounds, and cast-iron frame holders at him; and he takes it with a patience of a Job, at least it appears so; but I think all the more of him for that. The language of an old divine is, "in your patience possess ye your souls."

But what I wish to get at more particularly, is that the honor of inventing movable frames seems to be so grudgingly or reluctantly given to him who is entitled to it. Some would call them American, and some call them side-opening hives; while others would perhaps like to have them called thin paste board side, or hoop-bound frames, instead of coming out with due credit and honor to the man who most likely invented those frames, and did undoubtedly obtain letters patent, a re-issue, and an extension of that patent, and call them at once the Langstroth movable frame. I feel considerable more on this subject, but shall forbear for the present; for some might think thereby that I am also more partial than I should be. But I am waiting to see a tested improvement on his frame, and then I will fall in. But not sooner.

S. B. Replogel.

Martinsburg. Pa.

☞ Send us the names of Bee-keepers, with their Post Office address.

[For the American Bee Journal.]

Ventilating Bee-Hives.

In the February, 1867, number of the Bee Journal, is an article from me on this subject, which has been severely criticised in several papers, because contrary to the statements of authors of established authority.

In the July number, a correspondent who signs himself "*A Wolverine Bee-Keeper*," relates "*Two Mishaps*," and says that until he read my statement he had always supposed the bees were smothered, and adds: "If Mr. Adair, or any of the numerous readers of the Journal, can give me any other satisfactory reason for the loss, I shall be glad to hear from them.

As soon as I received the paper containing the communication, I wrote what I considered an explanation, giving my experience in similar cases. That communication you inform me was never received.

Mr. Wm. Bruckisch, of Hortontown, Texas, in an article published in Patent Office Report, 1860, page 170, from which I quoted in my first article, says: "Another remarkable feature deserves mention. *Bees are capable of living for days, and weeks, and even months, without air—at least without the occasion of fresh air.* * * * * * This fact being of great importance on account of the less quantity of food required during winter, (not, however, because of its total stoppage, as supposed by many), the writer made repeated experiments on the subject." His experiments are given in my former article.

"A Wolverine Bee-keeper," from his own statement, shows plainly that he did not smother his bees. He says "I closed the entrance, *raised the hive* a trifle, *holes in the top of the hive open*, honey boxes removed, cap covering the boxes on the hive." They were all dead in an hour and-a-half. In the other instance there was "a hole in the top of the box two inches square, covered with wire-cloth. In a half day two-thirds of them were dead. Now, it is plain that in both these "mishaps" the bees had plenty of air, more, in fact, than is frequently allowed bees that prosper.

The mishaps were not occasioned by want of air. I have had several "mishaps" of the same kind, which would make this letter too long to relate. But in every instance it happened when "*I raised the hive a trifle*" or attempted to leave some opening to admit air, but never when I closed the hive tight. I could not account for it for some time, why the bees would die when air holes were left open, and why not when all was closed tight, until last spring.

I had a natural swarm which I had just put in a hive, when another swarm issued and was about to go in with them, and I had to close the entrance to prevent it. After hiving the second swarm I returned to the first and they were nearly half of them dead. On looking for the cause I found that the glass which formed the back of the hive did not fit, but left a space of about one-eighth of an inch along its top, and the bees were trying to get out at the opening. I noticed further, that the bees were in a general row or fight, and that in contending for which should have precedence at the supposed exit hole, they would sting each other and fall to the bottom. When they became angry they had first to discharge the honey from their sacs before they could use their stings, which was continually falling on the bees piled below, besmearing them until they were black, and several table spoonsfull had leaked out of the hive on a board under it.

I puffed some smoke through the opening until the inside was a perfect fog, and closed up the opening with some paper, and quieted them; thus saving the remaining bees. I repeated it in another similar instance with the same result.

I transferred a colony, comb, honey, brood and bees to a section hive, and placed them on their stand with two entrance holes open three inches long by one-half inch wide. The glass in the back fitted badly, and left a similar opening. Next day I opened the door and found that a pint or more of bees had died and fallen in a pile below the opening, and the contention was still going on. I closed the gap and that prevented another "mishap."

In the last instance the regular entrance holes were open and most of the bees were passing out and in, with no confusion.

Three or four years ago I hived a swarm of bees in a tight hive. The next day they attempted to swarm out. When about half had passed out, I stopped the hole with a tight-fitting plug. The queen still being in the hive, the bees that were out returned and clustered over the hole. About dusk I opened the hole and they went in. The next day and the next, they repeated the attempt. In each instance I closed them up tight. On the fourth day they went to work and prospered. Not a bee met with a "mishap," except a few that I crushed in stopping the holes.

During the last season I often prevented swarms from issuing, by stopping the entrance holes, and keeping them closed until late in the evening, and repeating it the next day. In this time, the young queen was disposed of and the swarming fever passed over. In two instances I discovered the swarms coming out, and closed the holes. I kept them confined during that and the next day. In none of these instances did I "smother" a swarm nor any part of one. When I wish to prevent a colony from swarming, I find this a far simpler and easier plan than any laid down in the books.

Another experiment and I am through with instances. I took from a hive a honey box, fourteen inches long, by seven inches wide and five inches deep. It was filled with honey and bees. Every crack and crevice was made air-tight by the bees, except the passage hole; that I closed by covering it with a piece of waxed paper, such as is used in grafting. It was thus rendered air-tight. I set it on a smooth board in the shade of a tree, on top of the hive. One end was glass, which admitted light, but not air. *I let it remain there two days.* I then removed it about one hundred yards and opened the hole, supposing the bees would fly out and return to their home. Not a bee left. I supposed they had brood, but on opening the section of which the box was composed, (it was a "section honey box" by means of which each piece of comb could be separated from the others) and examining I found all the comb filled with honey and no brood. I then concluded that they had been separated so long from the parent hive that they had forgotten it. I took about a handful and placed them at the entrance of their hive and the guard bees refused to admit them, and they showed but little inclination to enter, but took wing and flew off. I hived them in a new hive, giving them two sheets of comb and brood from the old hive. They went to work and are now a prosperous colony. Could there be a severer test of whether bees can be smothered, or whether *they can live "without air, or at least an accession of fresh air?"*

I deem it unnecessary to prolong this letter, by commenting further on these facts. They are conclusive to me. The Solomons to whom we have looked for all of our bee knowledge I know have taught the reverse of this. But these are stubborn facts, and if Mr. D. C. Hunt, who says of my former article, "that the ignorant are wise in their own conceit," and uses other rough language, (see BEE JOURNAL, March, 1867, p. 172), will think and experiment a little for himself, and not set everything down as "fixed facts" that he has been taught by others, who are as "wise in their own conceit" as he seems to be, he may find that his aphorism "like chickens" and some other things, may "come home to roost."

The truth is that there are yet many things to be learned about bees, and that the economy of the bee-hive is not yet understood. We will have to learn several things yet before we attain perfection.

I have now written more than I intended, but will venture to theorise a little about this thing. If you think proper you can reserve the remainder of my letter for another number.

D. L. ADAIR.

HAWESVILLE, KY., JAN., 1868.

[For the American Bee Journal.]

An Inquiry by a Novice.

First.—Will some one of large experience give us the best way of raising early queens, before the appearance of black drones, so as to make early artificial swarms, and have fertile queens in readiness for them? But, especially how to get a supply of bees, to form nuclei as early as April or the first of May, without weakening the stocks from which the bees are taken. This I consider the secret of success; but have never been able to raise queens before swarming time and therefore too late for artificial swarms. I have tried Langstroth's plan of setting one hive on another, but could never get the bees to go up till June.

Second.—Will bees, returning from the field and finding the old stock removed, accept of a young queen in a new hive, on the old stand; with a frame or two of eggs and brood? I have never tried this, and do not want to risk the experiment.

ANOTHER NOVICE.

[For the American Bee Journal.]

Criticism.

Fair, honest, open criticism is solicited. Free discussion will bring to light many facts that a few are interested in keeping concealed. Mr. E. Gallup on page 80 of the Bee Journal, vol 3, speaking of the waste of wax, in constructing comb, says:—"If you have the bees in the right kind of hive, and ventilation just right, they will not waste one particle."

I have a suspicion that Mr. Gallup does not know what kind of a hive, nor what ventilation, *is* right. If he does let him tell us, even though he is no "scholar." Every *experienced* bee-keeper knows that his "division-board" would be a failure as far as saving *all* the wax is concerned.

In regard to the "two-story bee-house," is it not rather strong language, for the sake of finding fault, to say—"the upper story is good for nothing," when perhaps he could only say in truth that the upper story was not quite as good as the lower.

Have a care, Mr. Gallup, for my feelings. How did you know but this was my *pet feature?*

I happened to say causually in my work on bees, that some hives do well, and others standing by them will yield no profit. He remarks—"I must confess that I was greatly disappointed in reading his late work. I expected that it would be fully up to the times. Why did he not tell us how to remedy this, and make all swarms equally prosperous?"

I will frankly confess that I am not able to tell "how to make all swarms equally prosperous," and submit to the humiliation of being *behind the times.* But I have a desire to catch up—am "ambitious to rise." Mr. G. has insinuated that anybody up to the times, *might tell.* Now, I insist he shall say where we can get the desired intelligence. I expect to make from some of my best colonies next season $30, $40, perhaps $50. If all that I have would be equally prosperous, I should have quite a snug sum. Now, I would give one-half of this to Mr. Gallup, if he will furnish the information to accomplish it. Let it come through the Journal, thus making it the "best source of information on the question;" and when the last is printed, the whole subject of bee-keeping is finished—we have it all.

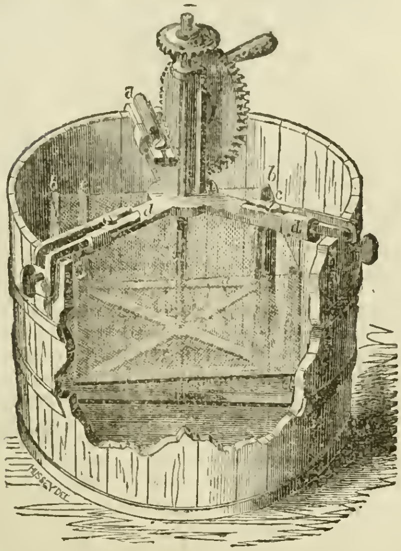
M. QUINBY.

ST. JOHNSVILLE, N. Y:

To ascertain the parent stock of a swarm:—It sometimes happens that a swarm issues unobserved and is found already clustered, so that it not known from which hive it came, when there are a number of strong colonies in an apiary. To trace its parentage, detach twenty or thirty bees from the cluster, dropping them into a tumbler or a small box; carry them in front of the apiary, and throw them up in the air by a whirling motion of the arm. Most of them will immediately repair to the parent hive, lighting near the entrance, and standing there fanning briskly, before rejoining the general mass, thus indicating their native home.—*Berlepsch.*

[For the American Bee Journal.]

Honey-Emptying Machine.



We, last year, made the following announcement in our circulars:

"A plan has been devised in Germany for emptying honey from the comb, without injuring the comb, or removing the bee-bread or any other impurities. By returning the emptied comb to the bees, the yield of honey, in favorable seasons, may be largely increased. An improvement on the German machine for effecting this object, has been devised and patented by L. L. Langstroth and Samuel Wagner, which will soon be thoroughly tested, so that the machine can be offered for sale the coming season"

Owing to constant demands on our time in other directions, the first machine was not ready for use, until the middle of June. We had sent to purchasers about the first of May, a large number of queens reared the previous season, and as the yield of honey from the fruit-trees and the locust blossoms had been very abundant, the combs, in many of the hives, were so filled with honey that the young queens had very few cells in which to deposit their eggs. In this state of affairs the machine was at once called into play; four, and even six, of the heaviest combs were taken out, the uncapped cells emptied, and the combs returned.

During the course of this work, we found that sealed brood in the combs was *uninjured* by the process of emptying, that the eggs in the cells were *undisturbed*, and that pollen, freshly deposited, remained in place; but that all the honey uncapped, and all the young *larvæ* in the cells uncapped, made haste to quit the comb when once the machine commenced to work.

An apiarian friend, whose articles have often added interest to the columns of the *Journal*, being soon after on a visit to our apiary, saw the machine and devised a plan for making it lighter, simpler, and cheaper, and at the same time equally adapted to most of the ends sought to be attained. Our original machine, of which a cut is annexed, which will serve to give an idea of the principle on which we work, (viz: centrifugal force), had two ends in view: one to allow of the reception of comb frames of different sizes, the other, to allow of the use of different sized barrels or receptacles. To accomplish these ends, it had been made of iron, with numerous bolts, pillars, screws, &c. In the modified machine, the patented features are dispensed with, a barrel being furnished with each apparatus, and the comb-holder of wood, being made large enough to hold the Langstroth frames used in hives not over ten inches deep. Smaller frames, or *pieces of broken comb*, can as readily be emptied.

This modified style we have thoroughly tested, and found to work to our satisfaction. With it, two full combs, in our frames, can be emptied dry and clean, in less than three minutes after the cells are uncapped. This uncapping was at first a very difficult process, until we had a knife made expressly for the work; this knife needs to be frequently dipped in boiling water, to prevent clogging of the edge.

After a little practice nearly every cell can be readily uncapped by this knife, without materially injuring the comb, which can at once be returned to the bees.

Having already made this communication longer than was intended, we will only add that since the first day of December, we have emptied successfully all our full combs secured as surplus, and that the honey obtained from these combs, many of them black from long breeding in, and more or less stored with bee-bread, was of good color, and possessed the peculiar, delicate flavor which would have been destroyed if the comb had been subjected to either heat or pressure. We have found no difficulty in selling this honey at wholesale, put up in "glass screw-top fruit cans," side by side with the finest box honey, for only a few cents less per pound. For table use, in all except the mere show made by white comb, it is far preferable to honey in the comb.

As we are continually in receipt of letters of inquiry in regard to this apparatus, price of machine, directions for making, &c., allow us to add that we have made arrangements for the supply of such machines as may be ordered, including knife and barrel, at an advance over cost barely sufficient to pay for our time in attending to the matter.

Any one is, of course, free to make them. For further particulars, we refer to our Circular and Price-list for 1868.

L. L. LANGSTROTH & SON.
OXFORD, BUTLER CO., O., *Feb.* 1868.

* * *

If worker bees are to perform any service of much account in the year in which they are bred, they must be hatched at latest on the 15th of June, in districts where there is no fall pasturage.—*Berlepsch.*

* * *

A northern man, who recently emigrated to Jefferson county, in the lower valley of Virginia, made 1,500 pounds of honey from fifty hives of bees last summer, which he sold for $450.

[For the American Bee Journal.]

Experience in Italianizing.—No. 2.

Mr. Editor:—In five days after I had found the queen—or the second one—for I am convinced that I found two, an old bee-keeper called to see my bees. He had just ordered two queens from Mr. Langstroth. I related to him the circumstances in reference to finding the queen, and expressed my fears that, as the Italian queen to be introduced had been kept in the box since July 24th, seventeen or eighteen days, she could not hold out four or five days longer, until I could introduce her. On examining the box, he agreed with me, saying he hardly believed she was still alive. I asked him if he thought I could safely introduce her now, it being five days since I removed the black queen. He said we would open the box and see if she was yet alive, and if she was, we had better risk it, than risk keeping her any longer. On opening the box there were hardly twenty bees alive. But her majesty was still living, though very weak. We knew of no way to keep her a few days longer, and I determined to risk introducing her then. So we caged her with eight bees; cut out all the cells we could find; put the cage on top of frames where the bees were thickest; leaving off honey-board, and spreading an oil cloth over, as I always do since. When I went to uncage her in twenty-four hours, she with every bee was *dead*. Thus I realized the failure I had expected to be the result of this *bothering* case.

Being determined not to give up, or *grieve* over spilt milk, I determined to let them remain queenless until they would be glad to accept any queen I should see fit to offer them; went to my desk and ordered two more queens to be shipped forthwith. I would have sent to Mr. Langstroth this time, as it was much the nearest point, but I knew from the gentleman above referred to, that Mr. Langstroth could not furnish them for several weeks. Mr. Quinby filled the order promptly; but the bees were eleven or twelve days on the road, though they finally arrived all right. By the way, I examined the hive again in five days from the time the queen was killed, and found four more sealed cells, which I removed. This was the cause of the killing of the queen. We had either overlooked them, or they were built over larvæ five days old from the egg.

Nine days previously I had removed a queen from another hive, to receive the second of the two queens ordered. This case hardly took me an hour, with no assistance. I introduced those two queens safely, but made a very ludicrous blunder in the first instance, that came near ending in the loss of the queen. This was as follows: The bees that came with the first two queens were common black bees; and I expected of course those coming with the second two would be of the same kind. But on opening the box before the window, the first bee that came out took position on the top of the box, with wings vibrating, abdomen extended, and yellow bands glittering in the sun. Not expecting to see a such bee, I immediately seized her, supposing her to be the queen, dipped her in a spoon of honey, and introduced her. While going to the hive with her in my hands, she curved her body and made vigorous efforts to get loose. I thought Mr. Quinby had sent a very small but stout queen this time. The greatest wonder was that she did not sting me, *as she ought to have done*, for she proved to be a veritable *worker*, as we shall see. After introducing her, and believing all was right, I returned to let the remaining bees out of the room. On entering I found the window full of yellow-banded *queens*, precisely like the one I had just introduced. I saw my mistake instantly. Nearly all the bees had left the box, and collected on the window. But on looking in the box, I saw her majesty at once. I had many doubts whether the bees would accept her now, after having deceived them with a worker, but finally concluded to try by experiment whether she would be received or not. I introduced her in the same manner, by besmearing her with honey. I would here remark, in passing, that for besmearing a queen, I use a little honey taken from the hive to which the queen is to be introduced, and have thus never failed to introduce them safely. While introducing this queen, I accidentally dropped her on the honey-board, about three inches from the hole I intended to put her in. She ran into it with the swiftness of a cockroach. Novices should guard against such accidents; and those who read this will be in no danger, probably, of incurring such risks. After being satisfied that I had introduced these two queens successfully, I resolved to give the bees no cause for excitement, lest the newly installed sovereigns be yet killed, during a temporary ebullition of passion. I believe bees can be provoked to destroy their queen, and hence I never opened either of the hives to see if all was right, till I saw the young Italians come out to play, in thirty-four days after. At present I would not fear opening a hive half a dozen times, if necessary, the week after I introduced a queen. But my rule is never unnecessarily to disturb a colony—though, at that time, I had other reasons for being so careful of the queens. I was very anxious to raise queens and Italianize all my other colonies, the ensuing season, from those two queens. I then had seven other stocks, besides those two—having had six in the spring, with but two swarms that season, besides one from the woods, making nine in all. These I wished to Italianize before they increased.

Having been very successful in wintering bees, I intended my next number for that subject, but as the season for raising queens and Italianizing is approaching, I shall devote it to those topics; so that those who prefer my process as being easier, may have an early opportunity to try it.

It would be a good plan for others of large experience, to write on the same subject for the May number of the Bee Journal, so that we may have a greater variety of plans and suggestions than has yet been submitted to it readers. If Mr. Langstroth could finish his hand-book, giving various practical manipulations and useful processes in detail, the book would find a rapid sale, and be just the thing needed.

Lowell, Ky. A

[For the American Bee Journal.]

Objections to frames being placed at equal distances from each other in movable Comb Hives, considered.

Mr. Editor:—In the Bee Journal, vol. 5, page 58, it is stated that "adjusting the frames firmly at equal distances from each other, is a decidedly objectionable plan, and certainly a retrograde movement in bee culture. It was used, fully tested, and abandoned years ago."

I cannot possibly concur with the above, and though Langstroth says; "you will soon get tired of frames in notches," yet such has not been my experience. It appears from the above that, long ago, it was thought desirable that frames should be fixed at equal distances from each other. Is it not just as desirable now? But it is said that "it was fully tested and abandoned years ago." But is not this an age of improvement? May not hives differently constructed from those in use years ago, admit of the frames being laterally a fixture? We will consider the two principal objections to this plan. First, it is claimed that frames so fixed will not admit of lateral movement; hence they cannot be pushed together for the purpose of removing any desired frame. Second, it is claimed that, on account of the irregular shape or uneven sides of combs, they cannot conveniently be exchanged where frames are fixtures, as one comb would crowd upon another. Now, Mr. Editor, I claim that these objections arise from the use of hives which are not properly constructed. In other words, in properly constructed hives, the frames may be fixed, and still admit of a lateral movement, and being exchanged, when filled with comb, without difficulty. Now, if hives can be so constructed, and in their construction lose none of the advantages now given by the best frame hives, would they be objectionable—a retrograde movement in bee culture? I think not. In 1864, I invented and patented a hive, the frames of which are fixed at equal distances from each other, and yet they admit of both a lateral and a vertical movement, with far less difficulty than any other hive with which I am acquainted (and that is not a few). And the annoyance to bees is so much less than with the Langstroth and other hives, that some who have adopted the hive, have written me that they were no longer troubled with stings when operating with their bees. That is almost as good as Flanders' "bee charm." Neither do I find any difficulty in exchanging cards of comb—often doing so every day in the week, if I think it is required. I practice artificial swarming; strengthen weak stocks, by exchanging cards of comb with stronger ones; build up stocks for shipping; in fact exchange the combs in any way that they may be exchanged in the Langstroth or any other hive; doing so for the last four years, and instead of being tired of "frames in notches," I would not have them otherwise on any account. But it must be understood that combs made in my hive, will, as a whole, be far less crooked and waving than when made in hives that are long from front to rear. This is easily explained. The shorter the top piece of the comb frame, the more even and straight will be the comb, as the bees always commence to build at less points on a short top piece than on a long one. I have known bees to commence at four different points to build on a frame in a Langstroth and other hives that are long from front to rear; whereas on a frame that the top piece is only about twelve or thirteen inches long, they will seldom commence at over two points, and frequently at only one; and hence the bees are more likely to build straight. I would not however speak disparagingly of a Langstroth hive, as I consider it better than at least two-thirds of the modern patent frame hives. Yet it will not admit of frames being fixed, neither will it secure as straight combs as a hive shorter from front to rear, unless elevated, which amounts to the some thing as shortening the frames. I use a top piece made like the letter V. I never use guide-combs, could not be bothered with them; and the combs are so straight and even that practically there is no difficulty in exchanging them, though the frames are firmly adjusted at equal distances from each other. Furthermore I pledge myself to examine the bees in three of my hives, removing any comb, and with less annoyance to the bees, in the same length of time that it will take to examine, in a similar manner, two hives of any other construction.

J. H. Thomas.

Brooklin, Ontario.

[For the American Bee Journal.]

Explanation.

Editor Bee Journal:—I perceive that I am called upon for explanation, or reconciliation of things said in my book and circular.

A. B. K., on page 137, Bee Jourlal, vol. 3, calls for more light, &c.

On page 311 of Bee-keeping Explained, I spoke of "Early Red or June Clover," as frequented by the Italians or hybrids, during the first few months of my acquaintance with them. In my circular of 1867, in enumerating their good qualities, as stated by others, I said—"Will work on second or seed crop of red clover, when other sources of honey are not abundant." I then remarked—"I have no opportunity to see them work on red clover, so little is raised in this vicinity." Here is where I am at fault, in omitting to use again, in the last paragraph, the words "second or seed crop." Had not my attention been called to this subject, I would not have noticed that the words were not there. I see in the circular of the year previous, it reads: "I have no opportunity to see them work on red clover, so little seed clover is raised in this vicinity."

There are many varieties of red clover, differing materially in the secretion of honey. Some secrete honey at one time, and not at another. If Mr. K. will observe closely, he will find even white clover varying from a plenteous yield to none at all.

M. Quinby.

St. Johnsville, N. Y.

[For the American Bee Journal.]

Wintering Bees in Cellars.

Mr. Editor :—In a former communication I stated that I had united such of my colonies as I thought were too weak to winter well, and removed them to the cellar, leaving only two holes in the honey-board open for ventilation, and asking some of the readers of the Journal for information whether this was sufficient. A few days after sending off my letter, I examined my bees, and found them all astir, trying to get out at the entrance and the holes in the top. As the weather was too cold to remove them to their summer stands and let them fly, I used a little smoke to drive them down below, and made five more holes in the honey-board, covering them with wire cloth, to keep the bees in and *mice* out. In a short time they became quiet, and have remained so ever since, showing clearly that they had not sufficient ventilation at first.

I found a large number of dead bees on the bottom boards of these hives, some of which I suppose had worried themselves to death in trying to get out. But I think it probable that the larger part of them died of old age, as there was but little brood found in any of my colonies after the 20th of September. And I am satisfied now that it is of little use to build up strong colonies with *old bees* in the fall, expecting them to come out strong in the spring, either in numbers or physical strength. These old bees may live through the winter in a hive of proper construction, and in an atmosphere of even temperature, but they will soon die off when the busy labors of the spring commence, and before a sufficient number of young bees are reared to take their place. The only remedy I can suggest is, to tempt the bees to continue breeding as late in the fall as possible, by feeding regularly a small quantity of honey or syrup every few days, provided there is no forage for them in the fields.

Permit me, through the Journal, to return my thanks to Messrs. E. Gallup, T. F. Bingham, Thomas L. Sydenstricker, and A. Grimm, for their kindness in answering my inquiries (by letter) in regard to ventilation, temperature, and water for bees.

Mr. E. Gallup, in his letter, gives some experiments in *ventilating* and *watering*, that I think will be of interest to the readers of the Journal, and as Mr. G. has given me permission to do so, I send you his letter for publication. Will Mr. Grimm give us, through the Journal, his manner of packing bees in his cellars? In one of these he is wintering three hundred and ninety-three swarms, all of which were doing finely at the time of writing, (January 13). He also states that he is wintering some forty swarms underground, all in one pile, and covered with about twelve inches of straw and eight or ten inches of earth; but does not like the plan as well as wintering in the cellar.

J. R. Gardner.

Christiansburg, W. Va.

Dr. Dönhoff regards the antennæ as the olfactory organs of the honey bee.

Mr. E. Gallup's Letter on Ventilation and Watering.

Mr. Gardner :—I will endeavor to answer your enquiries in the January number of the Bee Journal, and as you may need the information before you get the next Journal, I proceed to give it to you immediately.

Your first enquiry is about feeding entirely on molasses in winter. It is poor feed for the inexperienced. You can feed on almost any kind of sweet in spring or summer, when the bees can fly out. If you have no honey, use white sugar dissolved in boiling water and of the consistence of honey, for winter.

How are you to know whether your bees have ventilation enough? I answer, by the action of the bees. I have one small swarm that I have closed the entrance, and have two holes in the top about the size of yours. Then I have two extra large swarms, from which I removed all the top, honey-board and all, and then had to raise the hive three-quarters of an inch from the bottom board on one side, before they had sufficient ventilation. (I do not use anything to stop them in.) Your bees must not show any agitation, but be perfectly quiet. On listening near the hive you can hear a gentle humming, if all is right. Do not fasten them in, but use you own judgment, governed by the action of the bees. A small swarm must not have a current of air through the hive; neither must they have too much air from any source. A large swarm must be ventilated accordingly. Any medium swarms have the common entrance, three inches by half an inch; and a five-eighths inch hole directly above, three inches from the top, and two holes in the honey-board towards the outside, about one inch by three, all open, varied a little to suit the swarm.

The temperature of your cellar ranges exactly like mine.

Do bees want water, &c.? Last winter was the first time that I ever tried water for bees. I fond that as soon as they commenced breeding (which a strong swarm will do about the first of February,) every time I went into the cellar with a light, some few of the bees would come out of their hives. I then began giving them a little fresh water every third evening, in a small piece of comb laid close to the top ventilation, and they kept quiet. But on stopping the supply of water, they became uneasy again. I kept up the supply and had no further trouble. Your climate must be warmer than ours, hence the bees would probably commence breeding earlier. You can also set them out earlier in the spring.

Do not set your hives directly on the bottom of the cellar, but have a bench or something two or three feet from the bottom, as the air is dryer.

A letter of enquiry, with stamp to pay postage for reply, will be cheerfully answered at any time. My experience cost me considerable, and I am willing to impart it to all sincere enquiries. Yours, &c.,

E. Gallup.

Osage, Iowa.

[For the American Bee Journal.]

How I became an Apiculturist.—No. 2.

The city of Langres, (Ligones, of old), situated on a high rock in the form of a promontary, is naturally so strong a position that the Roman emperors, when Gaul was subject to their sway, fortified it, placed it in charge of one of their prætors, and constructed a system of paved roads radiating from it. These communications, several of which still exist, greatly enlarged its transit trade, which continued to flourish, till railroads were introduced, and refused to scale the heights on which the city is located. When I was twenty years old, its annual fair, held in August and continuing eight days, attracted merchants from all parts of France, and buyers from the whole neighborhood around. I was then a clerk in one of its wholesale dry goods stores. That year, the municipal administration, according to custom, in order to give more splendor to the occasion, arranged for Sunday, various games and amusements, to be followed in the evening with a general illumination and splendid fireworks. The scene of these sports was between the cascade and the public or white fountain, on the grand promenade. An electrophore was erected to light at night this favorite resort, which is a walk two miles in length leading to the fountain, and planted with hundreds of linden trees.

It was in the afternoon, when, as with some comrades, I was following to the shooting ground the National guard and a company of firemen, preceded by a brass band, I observed a group of boys throwing sticks at a hollow tree near the walk. Approaching, I discovered that they were trying to smoke out a swarm of bees dwelling in a big linden. Fully persuaded that the tree guarded by the policemen, would prove a sufficient protection for the bees, and believing them to be out of reach of the boys, I passed on. But on my return in the evening, to my great astonishment, several boys were contending for the spoils of the ruined colony. With their knives they had cut away the rotten wood below the swarm; but the numerous stings they had received in their faces, showed that the bees had bravely defended their stores, and the victory had been warmly disputed. As for the bees, they were hanging in a cluster under the first branch.

The distress of that swarm, thus devoted to certain death, revived all my predilection for bees, and I felt an irresistible desire to save them, if possible. With all the eagerness natural to a young Frenchman, I came back to the city and supped hastily. Then, provided with nails, hammer, wire, and thread, and carrying a store-ladder, I went to a shop where I had seen straw hives for sale, and procured one. When I re-entered the promenade, the citizens were already gathered in groups, admiring the light of the electrophore, playing beneath the green vault formed by the lindens, while every leaf was successively tinged with all the colors of the rainbow. Too much pre-occupied and overloaded to think of stopping, I hastily left the main avenue, (where everybody appeared to be annoyed or incommoded by either my hive or my ladder), and turned into a lateral alley, where the coveted swarm was. My ladder being a little too short, I had to exert my gymnastic skill to the utmost, in order to secure the hive properly above the clustered bees. The wavering light of the electrophore by turns helped and hindered me; for when it flared up the bees would become excited, leaving the cluster and assaulting my stove-pipe black hat. It was then that I first noticed that bees have an antipathy to the black color, for while my hat was the target at which they aimed their thrusts, I received only a single sting on my hand. After introducing some few bees in the hive, I had the gratification to see the whole colony follow and enter in an orderly manner. I then came down, concealed my ladder, returned home and retired to bed, to meditate on what remained to be done.

To get possession of the bees was not very difficult; but to decide where to place the hive after the swarm was in it, was a much more perplexing matter. The rocks that girdle the city having limited its extension, gardens are rare within its area, the yards are small, and the streets themselves narrow. Hence it was impossible to think of setting the hive in a garden. My grandfather owned an orchard near the suburbs, but as that spot was not enclosed, the hive if placed there, might be upset by cattle or pillaged by vagrant boys. The roof of the storehouse where I was clerk, though covered with tiles, had one of its slopes leveled in terrace, and that part was covered with zinc; and I selected this as a suitable spot.

As it was necessary to bring in the swarm before daybreak, I remained awake the rest of the night. Before four o'clock next morning I was knocking at the shutters of his lodge, to arouse the keeper of the city gate, which is kept locked from ten at night till five in the morning. Whether the man was really asleep, or whether he merely feigned to be deaf, I know not; but could obtain no answer In vain did I offer him the customary fee of two cents; in vain did I, with huge generosity, proceed to increase the proffered perquisite to ten cents! No response could be elicited! Finally, despairing to see him before the established hour, it occurred to me that there was a breach in the wall near the college, through which the schoolboys used to scale the ramparts. I ran thither, and finding the place with the pegs which had been driven in the fissures still remaining, and descending by their aid, I went directly to my swarm. The bees were all peacefully in the hive. Fastening my handkerchief under it with pins, and passing some twine around it for greater security, I took it up and triumphantly re-entered the city. After installing the hive on the zinc-covered platform, I unfastened the handkerchief, and came down to attend to the customers of the store.

Immediately after breakfast, I went up again to see how my bees were getting on. They were as regularly busy as though they had been located there a long time. But, under the burning rays of the sun, the zinc was already getting hot, though it was yet far from noon. Fearing that the heat of the zinc would compel the bees to decamp, I looked about for something to afford them shelter. In similar circumstances, we might, in this country, use the side or top of a common packing box; but not so in France, for there dry goods are usually baled up in coarse bagging. Unfortunately customers were waiting, and I had nothing suitable for the purpose. Yet there was no time to lose. I chanced to espy the cover of a large and deep cistern, which was always kept full, though used only in lye-time. In France, linen being abundant, families generally wash their clothes in lye, only two or three times a year.—To save room the cistern had no stone curbing, and hence I hesitated to let it remain uncovered; but reflecting that there were no children there, and deeming it highly improbable that anybody would be drowned at night in a corner of the yard where no one had anything to do, I resolved to carry the cover to my bees, determined to take it back again as soon as possible.

The apprehensions, which during the day frequently recurred to my mind, disturbed me in my sleep next night. I dreamed that somebody had fallen in the cistern. I heard his groans, intermingled with the rippling of the water. At last fear and pain became so poignant that I awoke. The splashing of the water still continued. I doubted whether I was quite awake. I sat up on my bed in order to recollect myself. Then the noise ceased, and I imagined that I had the nightmare. Again the rippling was renewed for some seconds, ending in a cry or rather sob choked in the throat by the suffocating water. Doubt was no longer possible—in my imprudence I had caused the death of some one; and frantically I imagined the miserable condition of the wretched creature whom the water had swallowed up. With lightning speed a thousand thoughts flitted through my brain, and set the hair on my head on end. I rushed undressed out of my room, ran shrieking, and knocked at every bedroom door. My messmates, believing the house on fire, were soon gathered at the scene—not one was missing. Our old servant, Francois, came first to the rescue. We lowered his lantern in the cistern, and saw a big white cat floating in the water! She was in the habit of descending by the waterpipe from the high wall enclosing the yard; and not suspecting on this occasion that the cover had been removed, took her accustomary leap, and *landed* in the water. Her fall and death-struggle had caused all my terror. The reader will readily imagine that the cistern remained uncovered no longer.

Hamilton, Ill. Chas. Dadant.

[For the American Bee Journal.]

The French socialist, C. Fourier, whose genius comprehended at once the greatest schemes as well as the smallest ameliorations, besought the nations, some sixty years ago, to organize industrial armies for the purpose of piercing the Isthmus of Suez and of Panama. In the same work he reproached naturalists for occupying themselves principally with dry nomenclatures, and subordinating thereto the interests of practical science. In support of his position he quoted their inability to find, either a kind of bees with a proboscis or tongue long enough to gather honey from the blossoms of red clover—thus allowing it to evaporate daily; or to discover a species of red clover with so short a corolla as to permit the bees to reach the honey within.

The accounts so discrepant published in the Bee Journal, respecting the red clover and Italian bees, led me to remember the work referred to above, and to think that the contrariety of statement on so plain a subject may be caused by an accidental difference in the length of that flower's corolla. This difference may result either from differences in soil or season, or may be the effect of some specific variation become fixed in the very flower. This matter can be elucidated by the bee-keepers, whose bees are seen gathering freely on the red clover. For this purpose let them carefully gather some seeds, when ripened, from clover blossoms on which the bees were seen to be busily foraging; and send those seeds to be sown in localities where bees were never seen gathering honey from such flowers. If the shortness of the corolla be thus ascertained to have become a permanent characteristic, (and we daily witness greater changes in cultivated plants), it would be easy for the community of bee-keepers spread throughout the United States, and who are for the most part agriculturists also, to substitute everywhere the short corolla clover for the long, and thus introduce in the country a new and valuable source of sweet income.

Hamilton, Ill. Chas. Dadant.

[For the American Bee Journal.]

Change of Progeny.

Last year, as well as this year, I had several bastard Italian stocks of honey bees, whose queens gave birth to a predominant Italian progeny, in their earlier period of life; but in the second summer of their existence, their progeny was almost exclusively pure black bees. A similar change was noticed by Dzierzon, and Berlepsch (Bee Journal, Volume 1, page 18). Can any bee-keeper explain this? If the sperm of the drone is preserved in the *receptaculum seminis* of the queen, and absorbed gradually during oviposition, should we not expect that the progeny of a queen fecundated by a common drone, would be all alike during her lifetime; and if any change was probable, should we not rather expect that the Italian blood would predominate in the progeny of a bastardized Italian queen, during the latter part of her life, rather than the contrary? Has any naturalist ever ascertained, by means of the microscope, whether one-fourth, or one-half, or three-fourths of the contents of a regular fertile queen's spermatheca, was used up in the course of one or two years? A. Grimm.

Jefferson, Wis.

The experience of later times has taught that bees are best preserved in winter, by a general restraint from the open air; that they may pass the time of no gain in sleep and slumber, with little waste.—Butler.

[For the American Bee Journal.]

Mouldy Combs.

As much has been said in different works, and by different correspondents, in regard to the utility of carefully removing old or mouldy combs, an experiment of mine may be found interesting.

About a year ago I examined the combs of a stock that had perished for want of proper ventilation, &c., and found them quite mouldy. Nearly every frame contained some honey, and many of them were full of dead bees. Finding it a hopeless task to pull the bees out separately, I carried the hive in doors, to be out of the way of robbers, and there it staid until June, when the bees were at work on clover.

After I had used all my frames of good combs, I opened this hive to see whether the combs had dried off and improved in condition. I found the honey had been so damp that what was in open cells had become sour; and the smell was so bad from the dead bees that I was tempted to melt all into wax; but taking some of the best I concluded I would try them. These the bees cleaned out, and filled with honey so rapidly, that I gave them some more. Finally, after airing them one forenoon, I took the two worst frames, which were full of dead bees and so mouldy that they were for the most part covered with a downy substance and smelled quite badly, and put them in the centre of one of my strongest Italian stocks. I must confess that I afterwards thought of taking them out again, for fear that the bees might desert the hive, so disagreeable was the smell; but, on further thought, concluded to wait until evening.

When I returned home I was at a loss to account for the number of dead bees about the entrance of the hive in which those frames were inserted, until I saw that they were the selfsame mouldy bees removed from the bad combs. And on lifting out the said frames, I was agreeably surprised to find them nearly filled with clear sweet honey, and the cells so lengthened out with clean white wax that I could not believe it possible they were the same, till I had examined all the others repeatedly.

It may be suggested that the bees could have built new combs nearly as quick as to cleanse the old; but from other experiments made at the same time, I am sure they could not have done so, by considerable odds. I have since used many frames of combs full of dead bees, but these were removed so readily, that I should never have known the difference.

Perhaps all bees are not as energetic as my hybrid Italians; but a frame of comb will have to be very bad indeed after this, before it is condemned.

NOVICE.

P. S.—Who is going to furnish us with artificial comb, or even the foundations, made of cloth or paper soaked in wax, as a correspondent suggested? I tried it last year sufficiently to convince me that the bees *would* use such material; but from my imperfect stamps, I could not prepare it satisfactorily.

One objection to the comb-emptying machine would be that folks around here will not buy strained honey, or if they do, it will not bring near as high a price as honey in clear white combs. Again, how will you prevent it from candying?

Who can furnish foundations for combs, or has the necesary dies for stamping them?

[For the American Bee Journal.]

Wintering Bees.

MR. EDITOR:—Would it not be a proper time just now, at the close of this long and severe winter, for bee-keepers to give their experience in wintering bees, through the medium of your valuable JOURNAL? If all would do this, giving the manner of treatment, the kind of hive used, and all the particulars in each case, it would certainly be a source of great benefit to young apiarians. Hoping that all will act upon this suggestion, I will give you my experience.

I had twelve colonies in the fall, all of them Italians—five in Langstroth's movable comb hive, two in Hotchkiss' dividing hive, two in Dr. Eddy's patent hive, and three in movable comb hives changed from common box-hives. Eight of them were strong colonies, with abundance of stores; one medium; two with plenty of bees, but short of stores; and one weak, with very litte honey. In October I fed the weak colonies as much syrup, (made by dissolving coffee sugar in hot water and boiling it until all the scum rose and was skimmed off), as they would carry down. Two of the weakest colonies I put into a dark room—with double walls, filled between with dry straw—well ventilated. The remainder I left on their summer stands, removing the honey boxes from all, but leaving the honey-boards on the Langstroth hives without any other preparation for winter.

Now for the result. On the 10th of March I removed the two weak ones from the dark room. One of them was in fine condition, with a small supply of syrup in the combs; but the other one had starved to death. One of the colonies in the Langstroth hive perished from *dysentery*, while all the others are in fine condition, with plenty of honey to last until they can gather from the opening flowers and buds of spring.

One year ago, I wintered all my colonies (five) in a dark room; and I think those I kept in the open air this winter are in as good condition, as they were in the spring, except perhaps a larger percentage of dead bees on the bottom-board.

I have come to the conclusion that there is not so much difference, after all, in the kind of hives you use for wintering bees, if your colonies are strong, with an abundance of stores, and plenty of *upward* ventilation.

GEO. HARDISTY.

MALVERN, O., March 12, 1868.

[For the American Bee Journal.]

Temper of Bees.

Mr. Editor :—As I intend to learn and practice to the extent of my ability, I feel deeply interested in the Journal and all other mediums through which I can communicate with others on the subject of bee-culture.

You did me the favor to publish a few remarks of mine in the Journal for October, 1867. I thank you for the comments on the article referred to. But as I was not sufficiently definite, I will, with your permission, try to explain more fully what I intended to convey.

I did not intend to be understood to say that all the descendants of my queen were hybrids, but will now say that of the three-banded bees, or "Simon Pures," I have had excellent luck, although a few of these queens do not produce all of that stamp.

But my observation and experience does not agree with those who claim that the Italians are more mild than the black bees. On the contrary, with me, those colonies where not a bee can be found with less than three yellow bands are more venomous than those mixed; and the mixed more so than the black bee. And I repeat it will yet be acknowledged that, in proportion as we Italianize our bees, in just that degree will their vindictiveness be increased. "Oh," says Mr. Queenvender, "your bees are not pure; you know nothing about the Italians." Never mind, I only speak of what I have seen; intending to know more, by and by.

I believe it is admitted on all hands that the hybrids are more pugnacious than the black bees, or that black bees are more mild than hybrids. Now the axiom that "like begets like" is contradicted, if this additional ferocity of hybrids is derived from the black parent; because the black parent could not invariably impart more venom than it possessed. Consequently it must have been derived from the Italian parent. This argument cannot be turned against the black bee, because its reputation is established by universal consent, and it is the standard of comparison; while that of the Italian is disputed by very many, and by some very high authority on any bee question.

Again, the claim of those who represent the Italians as such amiable creatures, proves entirely too much, for they give them the reputation of gathering more and better stores, and of being more successful and *resolute* in their defence against other *bees*, and yet *less* disposed to interfere with *man*.

Now, is it possible that a creature governed entirely by instinct, *can* have more resolution to defend against other intruding *bees*, and at the same time *less* resolution to defend against *man* as an intruder ? Or are they to be credited with so much sagacity as to enable them to discriminate between one class of intruders and another ?

P. Peckham.

Columbia Cross Roads, Pa.

☞Send us names of bee-keepers with their post office address.

[For the American Bee Journal.[

Answer to a Correspondent.

I did not set my bees out for a purifying flight until spring; have set them out sometimes in winter years ago ; but avoid doing so now, by keeping equal numbers of bees in each hive, and the right numbers of hives in each room well ventilated, dark, of a uniform temperature. Have kept a dozen hives in the house six months, on trial : they kept well. It will pay to house bees in the working season, when there is a failure of pasturage ; have kept them in some parts of all months, except June, for ten days at time, to save bees and prevent robbing.

The best style of hive for me to use with my knowledge, is a low box, containing frames ; as I get on and filled three boxes fifteen inches long, or six or nine shorter ones, as soon as I get the two twelve-inch or four shorter ones on my box hives filled.

I have one hundred box hives with bees in, the remainder of five hundred and fifty; the empty ones piled up for future reference. They are twelve by twelve, fourteen inches high, the bottom edge shaved down to one-fourth inch, ten holes leading into honey-boxes covered with a cap on top ; two holes between each comb, and they all straight from front to rear ; entrance one-fourth inch by four long at the bottom, one-half inch entrance near the top front side, open when the bees are at work in honey season, at all other times covered with wire screens. A single boarded house is too thin to winter bees in, as it is effected by every change of outside temperature. It will probably do to lath and plaster twice, as that will make two dead air spaces to your thin boarded house. In damp cellars ventilate well both the hives and the cellar room. I have used a cellar that had water stand in it three inches at a time. Of course it was damp the rest of the winter. I have used a thin boarded house, but can make a better one pay. If the feed is bad, or hives or room not well ventilated according to the amount of bees, and they need carrying out to prevent a worse state of affairs, that is, cannot expel the excess of moisture from their bodies, or from the hive, then carry out if the weather is warm. If too cold, put them in a warm, dry room. Ventilate every range of comb thoroughly with wire netting. If the bees are badly troubled, place a wire basket, the larger the better, for them to fly in. After they have evacuated the excess of moisture, and are quiet at dark, they can be returned to their winter quarters. I have more bees in my home apiary than I wish to keep some winters. I have now one hundred and forty in a cellar, one hundred and fifteen in a brick house, sixty in a stone house. Honey is the best, and the season was driest for years. The hives had no rain or snow on them for months. I carried the most of them in, early in fall ; generally have them all in by the first of November ; generally carry them out March 25th, then carry back part, sometimes the whole stock, until they can work.

St. Charles, Ill. James M. Marvin.

THE AMERICAN BEE JOURNAL.

WASHINGTON, APRIL, 1868.

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The Kentucky Bee-keepers' Association will meet in Lexington, on the second Tuesday in April, (14th instant), and will be pleased to see visiters from other States.

The good people of Wenham, in Massachusetts, in town meeting assembled, have voted that bees shall not be kept in their town, because, among other reasons, they (the bees, not the citizens) stole a few pounds of sugar from an upper room, the windows of which had been unwisely left open; and, furthermore, because they made an inroad on a certain kitchen, where odoriferous sweetmeats were being prepared without due caution. For this and other similar peccadilios, the poor bees are banished from the town by a vote of two to one. Thus the irrational creatures are first led into temptation, by the thoughtlessness, or the slovenliness—for it comes to that—of the rational portion of the community, and then banished for obeying the instincts of their nature.

With ordinary care the sugar would have been safe in its box, and confections could have been cooked in the kitchen without annoyance or interference. The sufferers, as they would fain regard themselves, are in reality more to blame than the alleged depredators; having caused all the trouble by first inconsiderately *miseducating* the bees, giving them access to coveted sweets, and allowing them opportunities to visit places from which common prudence and care would have kept them debarred. Thus taught "bad habits" (for that can readily be done), is it surprising that the bees were steadily on the lookout for chances to indulge their appetite, and make a dashing onslaught where a rich quarry was temptingly exposed? It was by indiscreet indulgence at the start, that the trouble *was invited;* for bees will not resort to such spots *in crowds*, till after individuals have been permitted to work the mine long enough to let the news of the discovery of a *placer* become spread abroad. Those thoughtless persons who permit the game to be carried on until the visits become a visitation, must charge the annoyance suffered and the damage sustained to their own ignorance or imprudence. Here too "a stitch in time saves nine," and "prevention is better than cure."

It also becomes a serious question whether careless and slovenly people have a right to ask those engaged in laudable and lawful pursuits to abandon them, that they, despite of slovenliness, may live at ease. It would hardly be fair, indeed, that even sugar refiners and confectioners should be granted an injunction against apiarians, because annoyed and perhaps injured by the bees; for the converse of the case might as properly be urged against them, and the argument be as valid. An apiarian, we apprehend, has as good a right to carry on his business in a community as either of the others. Nay, he might even allege that, besides being a public benefactor, saving that which would otherwise be lost, he is a great sufferer from them by the frequent destruction of his laborers *en masse.*

Do not tempt the bees, and they will not annoy you. Where they are invited to come, they will in time repair in crowds, if they find good accomodations there. If stinging follows, that too is commonly the result of provocation, for bees are not apt to sting when away from their home.

There was a time when, in Europe, the owner of a robbed colony could maintain an action against, and recover damages from, the keeper of the robbing bees. But now, thanks to the diffusion of a more accurate knowledge of facts, the man who there claimed damages in such a case, would be laughed out of court. It has become a well-known and recognized truth, that the owner of the robbed colony is at fault, and has himself to blame for his loss.

But will the Wenhamites gain much by banishing bees from their bailiwick? The metes and bounds of their town do not probably embrace the whole area of the Old Bay State; and if the good people continue to "keep open house," boiling sweetmeats with kitchen doors and windows open, and letting sugar "lie around loose" on the counters of their groceries and the shelves of their pantries, there accessible to outsiders, how are they going to keep out the "winged worshippers" that come from abroad? Is it even certain that those bees which committed the overt acts complained of, belonged to Mr. Gould's apiary? It is the very poorest sort of argument to allege that "an acre and a half of land" could not support a hundred colonies, therefore—*argal!* They, or many, or most of them, may have come from a distance. In this number of the BEE JOURNAL we have an account of a swarm that travelled eight miles for a lodgement; and we remember reading a story, well vouched for, of bees that flew twelve miles to forage in a buckwheat field! The hosts that were troublesome at Wenham may, for aught that appears, have come from the neighborhood of Squam Beach or Nahant, or even from the granite hills of New Hampshire! Grasshoppers in Kansas fly thrice as far.

But may not some good result from this anti-bee-bellum? If the action of a regular town meeting proves effectual in preventing depredations by *bees* from abroad, may not those of ants and roaches be in like manner arrested by a formal two-thirds vote? By all means, since they have their hands in, let the voters of Wenham try the experiment!

Foulbrood Again!

In the concluding portion of the Baron of Berlepsch's essay on foulbrood, given in the March number of the Bee Journal, there is an unfavorable notice of an article on "the origin, nature, and cause" of that disease, by Director Fischer, published in the transactions of the third meeting of German Agriculturists, in 1865. Against that judgment of the Baron, Mr. Fischer protests on the ground that experience has since confirmed and sustained his positions. He further says:—

"I am able to cause the best colony to become foulbroody in the course of a few months, and to cure a diseased colony in a still shorter time. At a suitable season I shall be ready to furnish the proof. The Rev. Mr. Huonder, of Medels-Plata, to whom, under injunction of secrecy, I communicated my prescription for the cure of his foulbroody stocks, wrote to me on the 24th of September, that they were restored to a healthy condition in the course of three or four weeks.

"The nature of foulbrood, its origin and cure, are in no respect mysterious, but entirely in accordance with nature, and as intelligible as any other vital phenomena in the case of bees. To many symptoms, hitherto regarded as secondary only or incidental, due prominence and significance are now assigned. Especially interesting are the physiological importance of chyle, and the structure and function of the organ secreting that substance, which cannot any longer be regarded as the product of digestion in the stomach.

"The practical consequences of the insight now obtained, are far-reaching—even apart from the proper cure of foulbrood. A gratifying surprise awaits that veteran apiarian, Dzierzon, inasmuch as the fundamental principle of one of the positions inflexibly adhered to by him, is now shown to be in strict consonance with a law of nature."

Director Fischer intimates that he will shortly communicate to the *Bienenzeitung* a sketch of his theory. But if he has made so important a discovery, as he alleges, why not take measures to have it tested in a trustworthy manner by some prominent apiarian, if he does not intend to make the prescription known at present?

The Kohler Process.

Great bodies in Europe, as well as in America, proverbially move slow. Fearing that if they relied on the action of Government officials to obtain a reasonable remuneration to Mr. Köhler for his process to secure the pure fertilization of Italian queens, when and where common drones abound, the method could not be brought into general use this year, the German apiarians have resolved to make up a sufficient sum by contributions from among themselves. The plan is to have the process communicated to each contributor, by printed instructions, but not to be divulged until such time as shall be agreed upon. This plan was proposed by the Rev. Mr. Kleine, and having been approved by a number of prominent apiarians, subscriptions will be received at the office of the "*Bienenzeitung*" in Eichstädt—each subscriber to specify the sum he is willing to contribute. It is expected that a satisfactory sum will thus be secured by the first of May. The main purpose is to compensate Mr. Köhler, in the first instance, for a discovery so valuable, and then make known the process, *pro bono publico*. This would be just to the discoverer, and liberal to the bee-keeping community.

☞We have received from the publishers a copy of the catalogue mentioned below. It is the largest, handsomest, most complete, best printed and most profusely illustrated, that has come under our notice; and will be fully worth its cost to farmers and dealers in all parts of the country.

"Allen's Catalogue of Agricultural and Household Implements and Machinery, Seeds and Fertilizers.—Messrs. R. H. Allen & Co., 189 and 191 Water Street, New York, who conduct the largest business in Agricultur-la and Horticultural Implements, of all American houses engaged in general dealings of the kind, have just issued a new edition of their very complete and handsome Catalogue for the current and coming season. It fills 225 pages, illustrated with nearly 400 engravings, and is sent to applicants for one dollar—less than the actual cost of production, and this amount is deducted on the receipt of orders from those who have paid it. Every Planter, or Merchant engaged in dealings with Planters, in the South, ought to have a copy of this Catalogue.

In our present condition there is no subject so important as the introduction of labor-saving machinery and tools on the farm and in the household."

[For the American Bee Journal.]

Can Bees Breed without Water?

On the 27th of October last, I introduced an imported queen into a stock of hybrid bees that had, during ten weeks, had a queen whose eggs would not hatch, and which had for this reason a large amount of bee-bread stored up.

On November 10th, before I put this hive into the cellar, I examined it and found that it had sealed brood in three combs. I made another examination about a week later, and found a large number of young bees hatched, and the same amount of brood-comb as before, filled with eggs and young larvæ. I examined again and again, and found that the colony went on breeding, though they could not get any water and I never gave them a drop. They could not get any from condensed vapor, as all this escaped through nine one inch ventilation holes in the honey-board. To-day, January 13th, I examined again, and found the last set of brood nearly all hatched, and every cell that was before occupied by brood, filled with eggs or larvæ. The bees appeared very lively and healthy, and had increased to triple their original numbers.

Can any one explain where these bees got the moisture wherewith to nurse their brood, if they need any besides what is contained in the honey? The temperature in my cellar is, and has been, excepting a few days, from 34° to 44°—F. I have not offered any water to any of my colonies this winter; but did so repeatedly last winter, though not one drop of it was ever consumed by any of them. From this observation I came to the conclusion that bees do not need any water when kept in a cool cellar, and that they can breed without it; but that they must have bee-bread to feed their brood. The stock referred to had to-day nearly the whole of its large supply of bee-bread consumed.

Three years ago, I wintered one hundred and seventy swarms in the cellar of my dwelling house, in which the temperature ranged from 45° to 52° F, excepting on a few days near the first of January. Here the bees seemed very thirsty, and drank water very freely. A number of stocks, however, which I did not supply with water, had a small lot of sealed brood on the 25th of March, when I took them out of the cellar. They showed no signs of dysentery, and their abdomens were as slender almost, as when they were first put in the cellar. They, however, were very restless, and many were lost by leaving the hive. I therefore would not advise bee-keepers to keep bees in cellars, the average temperature of which is higher than 34° to 44° F.

A, Grimm.

Jefferson, Wis., Jan. 13, 1868.

[For the American Bee Journal.]

Sending Queens by Mail.

Having succeeded in sending a few queens by mail, in the fall of 1867, I am encouraged to further trial. The box I use for this purpose costs so much less than the one sent by express, that I can better afford to make it and pay postage, than furnish the one heretofore used.

If I continue to succeed in this method, I will describe the box I consider best—having tried several.

Although this idea is original with myself, I shall not patent it; and one object in referring to it here, is to prevent others doing so.

St. Johnsville, N. Y. M. Quinby.

[For the American Bee Journal.]

Varronian Theory.

Prof. Varro's article of five columns, beginning on page 144 of the Bee Journal, I suppose when reduced to common English, means to say that the egg of a queen-bee must form a component part of the food of a young queen in the incipient stages of her being. His theory is very ingenious, but unfortunately there are a few facts with which it seems to come in collision. Any one may test the principle by shutting up a quart or more of bees, most of which should be quite young—Italians are preferable. Give them a few combs in which is sufficient honey to last a few days; see that there is not a cell containing an egg—using combs that were taken from the bees last fall, if convenient. Now, from some populous hive, cut a piece of comb two inches long by half an inch wide, which shall contain nothing but larvæ hatched about two days. I often get such a piece six inches square. Fit this piece in a middle comb, as directed in "Bee-keeping Explained," page 323. Said piece will contain about thirty grubs. Confine the bees to this for two or three days. At the end of this time, there will be half-finished queen cells, containing young queens and a full supply of food. In a day or two more, after the bees are let out, such cells will be finished, and in due time bring forth perfect queens. Where a large number of nuclei is started in this way, they will average about four cells each. Three-fourths of all the queens I raise are managed just in this way. Now, will the gentleman explain when and how the eggs for feeding these queens were obtained? Let it be in language we can all understand, differing somewhat from the article on page 144, in which a fastidious sense might *almost* detect a trace of pedantry.

M. Quinby.

St. Johnsville, N. Y.

[For the American Bee Journal.]

That Discovery.—Who will Explain?

The opinion seems to prevail that friend Quinby originated the plan of using two tiers of boxes for surplus honey. Friend Langstroth I observes has also this opinion. See B. J., vol. 3, page 149, where he says—"Make the cover eleven inches deep, that two tiers of boxes may be used, on the plan *first suggested* by Mr. Quinby.

The *Italics* are mine. Now this plan may have been "first suggested by Mr. Quinby," but where is the proof? I ask the question as a matter of apistical history, and would be pleased to see the question settled, and the answer recorded in the AMERICAN BEE JOURNAL. I am perfectly willing that Mr. Quinby shall have all the credit that belongs to him; but let us give the honor, if such it be, "to whom the honor is due."

Now, perhaps friend Quinby himself does not claim the discovery. Here is a revised copy of the "Mysteries," rewritten in 1865. We will see what he says on this subject. On page 62 and 140, I find this language:—

"The height of the cover should be seven inches, but where a double tier of boxes is used, it must be made fit?"

"Occasionally a colony will have too many bees to work to advantage in one set of boxes. In such a case, after the first are well advanced, raise them up, with the holes of communication through the top and bottom."

Certainly there is nothing in the above to show that the plan of using a "double tier of boxes," *originated* with this author. I may be mistaken, but do not think another sentence on this subject, can be found in the "Mysteries."

Thus it seems that Mr. Quinby does not attach much importance to the *discovery*, or he would, without question, have had more to say about it. It will be observed that *occasionally* we will have colonies strong enough to work in two sets of boxes at one time. This may be true in the East, where foulbrood exists, but not in this section. In many parts of the West, every strong colony, if kept from swarming, will need two sets of boxes.

M. M. BALDRIDGE.

ST. CHARLES, ILL.

[For the American Bee Journal.]

Explanation Desired.

I notice in the March number of the BEE JOURNAL, page 170, that fears are expressed by W. W. Baldridge, that foulbrood has been introduced into some of the apiaries of Iowa. This strikes me with much surprise, for I believe that I am well acquainted with all apiarians of any note in this State, being in constant communication with all leading bee-keepers. I have never heard of a single case of foulbrood in this State, nor of anything which could possibly be mistaken for it. Indeed I have never known any disease among bees here. It has been a matter of congratulation among us, that bees are so universally vigorous and healthy. Since Mr. Baldridge claims such knowledge, I call upon him to give the readers of the BEE JOURNAL the names of the persons in whose apiaries the disease is found, and the proof that such is the case. I can hardly believe that any person who knew that the disease was among his bees, would send queens away. Certainly I know of no Iowa bee-keeper who could be guilty of the crime—for I can give it no milder name. If any have been unfortunate enough to receive the pestilence with a queen from abroad, they should have the sympathy of all. Please, Mr. Baldridge, give us the names and facts, instead of "fears" and insinuations.

ELLEN S. TUPPER,
In behalf of all Iowa bee-keepers.

[For the American Bee Journal.]

Bee Feeders.

I see that Mr. Hunter, of Piqua, asks for information regarding an invention for feeding bees, and also inquires how he shall "feed bees in the Langstroth hives." I do not know what apparatus was meant by the writer in the *Rural New Yorker*, but can inform Mr. Hunter, that Mr. Edward Harrison, of Springfield, Ohio, has the most perfect thing I have ever seen for feeding bees, adapted to any form of hive. It is simple, cheap, and perfectly constructed, so as to prevent any interference from robber bees, and can be so adjusted that the bees of the cluster may have access to it in the coldest weather, with safety and ease.

I do not know Mr. Harrison's present address. He should certainly advertise his feeder, and introduce it to all bee-keepers. Probably Colonel Leffel, of Springfield, could give information of Mr. H.'s address.

E. S. T.

[For the American Bee Journal.]

Wanted!

A good method of destroying the drones of such hives as we do not wish to breed from. Something applicable alike to common and movable comb hives, and not patented.

It should be capable of being attached to a hive, without injuring it if left undisturbed several days. Breeders of queens could then prevent the flying of all the drones in the neighborhood which are undesirable for breeding purposes, provided all the owners gave their assent.

I have a device in view, and if on trial it proves a success, will inform your readers, unless a better plan is offered.

EXPERIMENTER.

☞Send us names of bee-keepers with their post office address.

☞Want of room constrains us to postpone to next month a number of communications now on hand.

AMERICAN BEE JOURNAL.

EDITED AND PUBLISHED BY SAMUEL WAGNER, WASHINGTON, D. C.

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[Translated from the Bienenzeitung.]

Practical Bee-culture.

I propose submitting some remarks on practical bee-culture; though what I have to say may not be new to all, I think it will be serviceable to some and interesting to many.

1. Can *Melilotus alba*, or melilot clover, be recommended as a good honey-plant? The cultivation of this plant as a forage crop for cattle, and for bee pasturage, has been frequently suggested. Attempts have been repeatedly made to introduce it in various sections of the country, and it has thus been tested in different kinds of soil and diversities of exposure and climate. Some writers have been lavish in its praise, and others have unspairingly condemned it. I tried it myself about twenty-two years ago, and spoke of it as follows, in the *Bienenzeitung* for 1845:—"Attracted by the favorable notices I had seen of this plant or melilot clover, I purchased a small quantity of seed, that I might test the alleged good qualities of this wonderful plant. The stalks produced grew to an extraordinary height, and yielded seed so profusely that could I have sold it at the price I paid, I should speedily have become rich indeed. The little white blossoms were continually covered with bees, and night alone compelled them to withdraw. But as for fodder, whether in a green state or dry, the plant was entirely worthless; and I have since been endeavoring to extirpate it again, though thus far with only partial success, because of its deeply penetrating roots."

I remain of the same opinion still, namely:—that this species of clover cannot be recommended as a forage plant. If grown for soiling, it must be mown long before it comes into blossom, and even then nine cows out of ten will reject it, because of its disagreeable odor. If permitted to bloom, the bees will for some time have an ample supply of pasturage, but cattle will afterwards refuse to eat the hard and ligneous stems. There will be plenty of seed, indeed, and could it be sold at one dollar per pound, as the seedsmen charge for it, it would be a most profitable crop. But, alas, the demand for it is small, and must so continue, unless some one is fortunate enough to discover that it possesses some yet unknown value for economic uses. Moreover this plant soon becomes a perfect pest on a farm, as a weed in the soil which can hardly ever be extirpated. I sowed the seed of it in 1845, in my garden, and though I have been rooting out the stalks ever since, whenever and wherever they make their appearance, and never permit any to ripen its seeds, it is still annually coming up. On road sides, on stony spots, or on poor sandy tracts not fit for tillage, this clover might answer, as it might there be allowed to bloom for the benefit of the bees. It will however not grow so tall, nor blossom so profusely there, as on richer land.

2. A much more valuable bee-plant than this, is the *Trifolium incarnatum*, or Incarnat clover, mentioned by me on a former occasion. As there stated, I had sown some seed of it on one of my poorest unmanured fields, the soil of which was highly charged with the oxide of iron. It stood the winter well, and grew splendidly in the spring. The stalks, when in full bloom attained a height of four feet, and presented a perfect sea of blossoms, on which the bees revelled in great glee. Unfortunately I was constrained to remove a large portion of it for soiling my cattle. The earliest mown, however, soon produced a second crop of blossoms and a considerable amount of aftermath.

As forage for cattle, I value this species of clover highly. The hay is greedily eaten by cows, hogs, and sheep.. In northern climates the plant is an annual; but, in southern, it may be regarded and treated as a biennial.

3. *Queenless Swarms.*—It has probably occurred in the experience of most bee-keepers, when bees have swarmed, that the queen was not among them. She either did not accompany them when they issued, or was lost in some way during the act of swarming. It happened last spring that the queen of one of my swarms was stung as she came forth—whether by one of her own bees, or by a stranger, I know not. I took the dying queen from the alighting board, inclosed her in a queen cage, fastened that in a hive which I held up among the swarming bees. They promptly entered and

surrounded her majesty; and I subsequently gave them a young fertile queen.

Usually, swarms that are queenless, or are unattended by a queen, are permitted to return to the parent stock, in the expectation that they will re-appear better provided, in a day or two. But it is by no means certain that they will do so. Sometimes a sudden change of weather occurs, bees lose the swarming impulse, and the hoped-for increase is expected in vain. If it can possibly be prevented, I never permit a prime swarm to return under such cimcumstances. As soon as I perceive from the indications in the hiving-basket, that the swarm is queenless—the bees not clustering properly, and some continually leaving for home—I place the basket on a frame covered with wire guaze, and close all the openings to prevent the escape of the bees. They soon become tumultuous and clamorous, whereupon I procure a fertile queen from one of my nuclei colonies, cage her, and insert her in the hive. In an instant all is quiet, the bees soon become attached to their new ruler, and in the evening I liberate her, and set them on their stand. Or if I have any weak colonies at the time, I strengthen them by means of these bees, which will remain in any locality wherever placed, and may if desirable be divided among several colonies.

4. *Uniting and Strengthening.*—It is often necessary to resort to each of those processes, and yet they are apt to be failures. A colony may be strengthened without endangering the life of the queen, if bees be brought from a distance and kept confined, queenless, in a well ventilated transporting hive, and then run into a weak colony in the evening. I have never lost a queen when thus introducing bees. In fact bees of different colonies standing near each other, will intermix in the evening without quarreling, and without manifesting hostility to to the queens. In like manner bees which, in the course of the day, mistake their hive and lighting at the entrance as strangers, beg their way in by fanning, rarely meet with a hostile reception. In view of this fact, when I wish to introduce bees to strengthen a weak colony, I place an inclined board in front of the hive, shake the bees on it, brush a few workers to the entrance, and the whole number speedily move forward humming and fanning, being peaceably received in their new quarters. The hive to be strengthened may also be removed from its stand and set on a table, and the bees to be added, shaken down in front of the entrance.

If the bees to be added have a queen, there may be trouble and loss. The bee books tell us "invert the hive containing the swarm, and set on it the one which is to be strengthened, and the queen will be dispatched as she ascends." Very plain, and very fine; pity it should so frequently fail. I once strengthened in this manner a weak colony containing a beautiful Italian queen, by introducing an afterswarm which I supposed to be queenless. On the following day I made an examination, and believed all was right; but on the third morning I found the Italian queen dead at the entrance. I re-examined the hive, and found a young black queen moving about very sedately on one of the combs. She had obviously killed her yellow rival.

In order to pack a large number of bees in a box for transportation to my apiary, I shake them from the swarming-basket, from combs, honey-boards, &c., into a vessel of water, and then transfer them by means of a strainer to a large sized cigar box provided with a wire gauze bottom. Set in the sun for a time, the bees become dry and active; and the box will contain safely a considerably larger number than could otherwise be confined therein. They must of course be supplied with food, if their confinement is protracted. Outlying bees may be brushed from the front of their hives into water, for the same purpose; but being treated on an empty stomach, bees are apt to be pugnacious, if a clean sweep is not skilfully made.

5. *Transferring combs, and encasing queens.*—Several years ago I lost a queen in consequence of transferring combs in the brooding apartment of a hive. She was killed by her own bees. A similar occurrence would probably have taken place in my apiary this year, had I not been present. I had a small colony in a square box hive, and wished to transfer it to another hive, in order to strengthen it with bees from other stocks. The queen, bred in one of my reserve nuclei, had been fertilized two days before, but had not yet begun to lay. I transferred the combs to the new hive, and found the queen among a crowd of bees in their old home; whence I transferred her also to her new quarters. I closed the hive, and soon after the bees of all my stocks began to fly or disport briskly. Those of the new hive did so likewise, but the excitement continued long after the others had become settled. Suspecting something wrong, I immediately made an examination, and found the queen encased by a cluster of workers. I lifted out the cluster to liberate the queen; and just as I was about to seize her, she took wing and escaped. Of course I thought she was lost, for being a stranger bred in a distant hive, she would certainly be killed outright if she attempted to enter any one of the forty stocks then in my apiary. I kept a good lookout nevertheless, and finally saw her near her own hive, having been seized by several of the workers who were endeavoring to kill her. Rescuing her from the imminent danger, I caged and replaced her among her still excited subjects. Next day, finding peace and quiet restored, I liberated her, and she at once mingled with the crowd without molestation.

When an unusual degree of excitement is observed among the bees of any colony, at their first flight in the spring, or when a young queen makes her wedding excursion, or after they have been disturbed by any operation, a thorough examination should be immediately made. In most cases the queen will be found encased by a cluster of workers, and unless quickly rescued, she is sure to be killed.

6. *Use of old Combs.*—It is well known that old brood combs are warmer than new ones, and better suited for wintering. Hence the advantage of using such as are still in good con-

dition, to furnish hives for the reception of swarms and artificial colonies. So long as a comb held up to light is still at least semi-transparent, it will be serviceable in a hive. Such as are black or opaque when thus held up, should not be inserted in the brood chamber—though one placed at the end of a range, as a cover to the rest, when the hive is only partially filled, will prove advantageous, if properly used. Then when the anterior combs are supplied with eggs and brood, this comb should be drawn back sufficiently to permit an empty frame to be inserted. The bees, who would hesitate long to pass beyond the old comb for building, will speedily fill the inserted frame; and the manœuvre may then be repeated again and again, till all the space is occupied; after which the old comb should be removed.

7. *Safe introduction of Queens.*—Most bee-books contain instructions for the safe introduction of Italian queens. Nevertheless many bee-keepers, beginners especially, complain of ill luck in the attempt. The surest mode is found to be, not to introduce the queen to the bees, but, on the contrary, the bees to the queen. If the bees remain in their accustomed home, they feel like lords and masters there; and, though queenless, they will very reluctantly accept an offered queen—much preferring to rear one of their own brood. The case is otherwise, when they are allowed to build queen cells, and all these are destroyed on the ninth or tenth day, when all the brood has been capped, and an Italian queen is then introduced. But in many cases, the introduction cannot conveniently be so long deferred, and I then use two wire gauze caps—a larger and a smaller—for the protection of the queen. If possible I select a brood comb, containing a few open cells with honey. On this I place the queen, covering her with the smaller cap. Over this I set the larger, broader cap, pressing it down to the septum or midde partition of the comb. The queen is thus secure from all hostile attacks by the workers, against which a single cap does not always afford protection. In the course of forty-eight hours the animosity of the bees usually subsides, and I remove the upper or larger cap. The other also may usually be removed on the following day.

When an artificial colony is formed, by transferring workers from their native hives, or by taking bees from three or four stocks, and locating them in a new hive, such precautions are not required, when introducing a queen. Bees thus removed to new quarters, or brought together from various homes, are confused and intimidated, and ready to accept a fertile queen when offered. Still the safer plan is always to cage her for a time, and watch the behaviour of of the bees.

O. ROTHE.

ALTSCHAU.

☞Old queens, or such as are becoming superannuated, not unfrequently lay a few drone eggs in worker cells, so that drones are occasionally found maturing amid worker brood. When this occurs a young fertile queen should be substituted for the old one.

[For the American Bee Journal.]

Hives and Management.

As I promised to give a description of the workings of the hive I use, for the readers of the JOURNAL, I shall commence by saying that it may not be by any means the best hive in use, but as I have tried almost all forms, and this proves the most satisfactory, I shall give it for what it is worth.

As I said in a previous article, if I was going to winter bees out of doors, I should make the hive deeper, but retain the same form. The frames, if proper care is taken in making them, will hang true on the rabbetings, even though twenty inches deep. But if nailed up in the common hap-hazard way in the rough, they will have to be fastened permanently at equal distances—which I have tried and rejected long ago. The shape of the hive I have given in a previous number of the JOURNAL; but I have a contrivance on the bottom which I have not described before. Say the hive is twelve inches deep, dress out your stuff twelve inches wide, lacking three-eighths of an inch; rabbet out on the outside at the bottom of the hive and nail on a piece of hoop-iron in the rabbeting, so that it will project three-eighths of an inch below the hive all around. Now, when the hive is set on the board, it rests on the knife-like edge of the hoop-iron, and there is no possible chance for a moth to hide; there is no accumulation of droppings under the edge of the hive for the miller to deposit her eggs in; and with my management, I have not seen a moth in that kind of hive in three years. I have some champered to an edge at the bottom, and some with boards without champering. In these hives I occasionally find a moth. If, as Mr. Quinby suggests, the miller deposits her eggs under the edge of the hive, and the bees carry them up on their feet, this hoop-iron arrangement may be a good thing. I am not yet prepared to say that a hive thus prepared is actually moth proof; but it is certainly better than a channel to raise moths in for the purpose of having the trouble of killing them.

The entrance is a channel cut in the bottom-board. Now, should you think an inclined bottom-board is a good thing, raise the bottom-board on the rear side until you are satisfied with it; but I will assure you that it is no benefit whatever.

If you want your young queens to mate with drones of any particular hive, move all the rest of your hives back on their bottom-boards from the channel, and close the hole above with wire screening. Now raise the front side of the hive on a *hard wood* wedge, just sufficient to allow the workers to pass out and in freely, and so that a drone cannot pass. Then your workers have the whole length and breadth of the hive, which is eighteen inches. Consequently it is much better than a patent thumb-screw to regulate the entrance. Move the hive forward on the bottom-board, and you enlarge the entrance; move it back, and the entrance is contracted, to prevent the bees from clustering out. In hot weather, move the hive forward over the front edge of the bottom-board, from half an inch to one inch, according to the size of the swarm; then every comb is ventilated. Some will tell you to fix a convenient place for the bees to cluster on outside; but I tell you to keep your bees at work inside of the hive. You will find that much more profitable. I never allow them to cluster out. Upward ventilation is wrong in the breeding season; and so is any contrivance for the bees to pass directly into the surplus honey-boxes from the outside of the hive, for the bees that gather the nectar from flowers are not those that store it in the surplus boxes. With the Italians any one can satisfy himself on that head; at least I am satisfied now.

For the upper part of the hive, when the time comes to put on your boxes, remove the honey-board and substitute small strips or blocks, one-quarter of an inch thick; lay them directly on the frames, and put on your boxes with the fourth of an inch space between the top of the frame and the bottom of the box, which allows the bees to pass over the top of the frame. Make your boxes, either large or small, to suit your own fancy. Should you use one box the size of the chamber, leave a two inch hole the whole length of the box. Should you use three boxes, they would be about eleven and a half by five and a half inches. Have two entrances in each box, one inch by five. Should you use six boxes, have the entrance one inch by five, and place them so that the entrance goes across the frames, instead of lengthwise, in every case.

Many persons complain that the bees do not work in boxes. I have frequently seen such boxes. For example, a friend uses the old fashioned chamber hive. He says I now let my bees fill the chamber, without boxes, and cut out the honey after cold weather, when the bees are below; for they always fill the chamber, but will not work in boxes at all. "Well, friend, they cannot work in your boxes." (He used boxes with an inch hole in each, to correspond with an inch hole in the chamber board). "You are a mechanic. Now, how are the bees going to work to cause a cool stream of air to pass into that inch hole, and a stream of heated air to pass out at the same time? With your boxes out, and your four holes open to the chamber, it is quite different." Still the said friend's hive was a patented one.

When bees are gathering honey, I take off a full box at night, and the empty one substituted will be filled with bees in the morning, at work building comb, &c. Again, with a division board, I can manage a small swarm just to suit me in every respect, or a large one either. To illustrate this: sometime in August, 1866, a neighbor found a swarm clustered in a bass wood tree about twenty feet high. He sent word for me to come and hive it for him. I was from home at the time, and did not get back till after dark. Having to go away again before light next moning, I went and hived the swarm for him that evening; and there chanced to be less than a pint of bees left on the tree. Three days after I took a piece of comb, with eggs and larvæ in it, tied it to the end of a pole, held it up to the bees, and they clustered on it forthwith. I put them in a small box and carried them home; took from a hive a frame filled about one-half with brood nearly mature, and the remainder eggs and larvæ just hatched; this I inserted in an empty hive, introduced a young fertile hybrid queen, and gave her the said lot of less than pint of workers. Adjusting the division board, I let them go to work without any feeding. They filled seven (7) frames that fall, and stored sufficient honey to winter on. Last spring I took out two empty combs and inserted two well filled with honey from another swarm; fed them about two pounds of sugar the last of June and up to the 20th of July. They then had five frames to fill with comb. The first week in August I took out one frame filled with brood and started a new swarm, and gave them access to the honey boxes to keep the queen busy below; and to prevent swarming. I took out frames filled with brood, one at a time, as they could spare them, to build up the young swarm. Taking out one of those frames did not appear to diminish their labors in the boxes in the least. Recollect that the frames are only about ten inches by eleven, inside measure. To sum up: after the 20th of July, 1867, they filled the balance of the hive, which was five frames; and I took away six frames filled with brood, one at a time, building up a first-rate swarm. I also took away one hundred pounds of surplus honey, two thirty-five pound boxes, and two fifteen pound boxes. When the bees were numerous enough to store twenty pounds of honey per week, and the thermometer was up to 100° in the shade, they did not cluster out the least. I am aware that the form of hive is not everything; but knowing exactly how and when to make the right moves, *and doing it*, has considerable influence on the result.

We will say that I have the Lee, Kidder, Champion, or Thomas form of hive, or even the shallow form of the Langstroth; then taking out one frame takes out too large a proportion of the working force, at once, from the main hive. I never could manage those hives so as to have all the comb worker-comb, and all occupied with brood throughout the entire comb surface in the breeding season. You must recollect that last season was the worst honey season that I remember, up to the 20th of July; and from that time up to the 8th of October, it was (for swarms that had been properly taken care of) as good as any I ever knew. We had none of the drought which was experienced in other sections.

Cheapness and simplicity in a hive is what I have been studying at for years, and it is preposterous to suppose that bees will make more surplus honey in your nail-keg than mine. But we ought not to have over three forms of hive, to suit every person's whim. Almost all the little fixings about a hive that are patented, are a perfect nuisance to the practical apiarian.

There is something yet that I have to speak of in this article. I formerly used box-hives twelve inches square and fourteen inches high, and used them for ten years without any sticks in the centre. The centre bar in the Champion or the American hive occupies space that ought to be occupied with brood. Say the bar is ten inches long in each frame, then it occupies ten square inches, or thereabout. Each square inch will contain fifty worker cells, and ten times fifty is five hundred. Thus your bees are brooding a stick instead of five hundred workers every three weeks during the season.

This article was suggested by my receiving so many inquiries from individuals relative to my opinion about different kinds of hives, &c., and whose hive I would recommend. I have endeavored to answer them without fear or favor. There are so many worthless hives, and so many worthless fixings about different kinds of hives, that it is not to be wondered at that the novice is puzzled to know what kind to choose.

A letter of inquiry enclosing a stamp will be answered on any occasion; but in future, by the editor's permission, some of the questions shall be answered through the BEE JOURNAL.

ELISHA GALLUP.

OSAGE, IOWA.

[For the American Bee Journal.]

Depth of Hives.

Mr. Langstroth in the February number of the JOURNAL, recommends the trial of deep hives, *as to their relative value for wintering in the open air.* I will give you a little of my experience. I have used hives sixteen inches, fourteen inches, and am now using them twelve inches deep. I have also had the care of them for my neighbors, of the dimensions Mr. Langstroth uses; but you must recollect that I have always lived in a colder climate than Mr. Langstroth does. The dimensions of the hive I now use, are twelve inches from front to rear, twelve inches deep, and eighteen inches long, inside measure. I have wintered in this hive in the open air with perfect success. But I never could winter in the open air, in any kind of hive, without the bees consuming too much honey to suit me. If I was going to winter in the open air, I would make a hive just high enough to admit a frame twelve inches high inside, and enough narrower to receive one or two frames less, because that is high enough to contain, above and in the cluster of bees, all the honey they will consume during the coldest weather. In the broad shallow hives the bees cannot cluster naturally; for a good strong colony in the fall, if allowed to cluster naturally, will occupy a space (together with the comb and honey), in a circular form, twelve inches in diameter. And when bees are constrained to cluster in a non-natural manner, they cannot economize the animal heat, either in winter or summer. Consequently the queen cannot breed up to her full capacity so early in the season; neither will she breed so well throughout the season in the broad shallow form. If the hive is too high, the bees eat the honey directly above them, and in the spring they commence breeding where they are clustered. It then takes them till late in the season before they occupy the combs at the bottom of the hive, which gives the moth a chance to get in. Another thing, if your combs are too deep, you cannot use a division board to so good advantage as you could if the comb was not so deep. To illustrate, say that for making small swarms or for raising queens, you take a frame from the American hive, and one from Mr. Langstroth's shallow hive; put each into hives just large enough for said combs, with bees enough to occupy the combs, and a fertile queen in each. You have got to have more bees, according to the surface of comb, to occupy those combs, than you would if that comb surface were in a more compact form. I would sooner have the surplus honey in the body of the hive for the use of the bees in spring, at the side than at the top. With the practical working of the hive I use, I am perfectly satisfied. For breeding purposes or wintering, I would as soon have a comb on one side of the bees, or both, as I would a board; and I am not sure but I would sooner. After all my experimenting, I am satisfied that hives can be too high for storing surplus honey, as well as on the opposite extreme, too low. High enough to have sufficient honey above the bees for the coldest weather, is sufficient.

In another article I give you the practical working of the form I use, I care not whose hive you call it. Mr. Langstroth's agents, and other agents also, have urged me to try their hives. I have never mixed myself up with any form of patent hive; so I ought to be as good a judge as those that are interested. I have had bee on the brain for the last thirty-five years. So MR. EDITOR, you will have to have some patience with me for occupying so much space in your JOURNAL. E. GALLUP.

OSAGE, IOWA.

[For the American Bee Journal.)

"A profitable Apiary" examined.

MR. EDITOR:—I find in your JOURNAL for November an account of Mr. Way's success in the bee business, furnished by Mr. Baldridge.—As I know no better way to come to just conclusions relative to the best mode of conducting the business, than by experiment and observation, I am always pleased with a definite report of results in different apiaries and in different hives.

This apiary consisted of 125 colonies, 18 colonies in hives that gave no swarms, and 107 colonies that gave swarms, constituting in the sequel 105 new colonies, and the product of surplus honey was about 2,920 pounds. If apiarians would keep exact accounts of their surplus, so as to render it unnecessary to calculate from about so much, it would be more satisfactory. The eighteen non-swarmers gave an average of 60 pounds each, at 30 cents per pound, or $18.

The product of the 107 colonies is, 105 new colonies and an average of 27½ pounds per hive.

A colony of bees will consume for breeding, drones, &c., during the summer season and for wintering, 60 pounds of honey. The eighteen colonies that gave 60 pounds surplus, and consumed 60 pounds, gave one half of the honey they gathered to the keeper, in surplus. The 107 colonies, with their 105 new colonies—together 212—consumed 12,720 pounds and gave the keeper 2,920 pounds.—While the first-class gave one-half to the keeper, in surplus, the second-class gave 208 pounds less than one-fifth in surplus, and consumed 202 pounds more than four-fifths of the honey gathered.

Is the consideration given to this view of the subject which it deserves? Thus, 130⅓ colonies in the first-class of hives, would have gathered 15,640 pounds, giving 7,820 pounds in surplus instead of about 4,000 pounds. This difference in surplus would pay for change of hives several times over—a difference, at thirty cents per pound, of more than 1,000 dollars.

I this spring had four colonies in a new hive, which I patented July 2, 1867. The product of the four colonies, this year, was four new colonies and 500 pounds of surplus. One of the four was an Italian swarm; three of them natives. The product of the Italian swarm was two new swarms and 106 pounds of surplus; of one of the natives two new swarms and 97 pounds of surplus. The other two natives gave no swarm, but one gave 123 pounds of surplus and the others 174 pounds. Each hive has eighteen surplus honey boxes, of the capacity in the aggregate of 125 pounds. It will be noticed that the two that gave no swarm gave 57 pounds more than two-thirds of all they gathered, and consumed 57 pounds less than one-third. My honey was more than two thirds of it from white clover, and most of it sold for forty cents per pound.

Every field is limited in its production. It is of some consequence to the bee-keeper whether he uses hives in which his bees will give him two-thirds of the product or only one-fifth.

Albany, N. Y. Jasper Hazen.

[For the American Bee Journal.]

Room for Surplus Boxes.

Mr. Editor:—In the Bee Journal for February, I saw in a communication from Mr. Langstroth, a plan for a Langstroth hive with deep frames, giving at the same time extra room for surplus honey boxes. I have a plan which I like better. Last summer I put a swarm in a hive made as follows: Take a Langstroth hive 16 inches long, 12½ inches wide, and 10 inches deep, with frames. And, instead of a honey-board, make a triangular top without frames; the base the right size to fit the hive, and bars of lath tacked on to prevent the bees from building combs to the frames. A top of this kind will hold eight six-inch boxes and makes a hive 13 inches deep. I got the idea from a hive patented by T. F. Bingham, of Gowanda, N. Y.

I am wintering thirty-six hives in different ways, and may report in the spring. Yesterday, February 19, was the first time the bees flew out, of any account, since winter set in about the last of November.

J. Winfield.

Canfield, Ohio.

Handling Bees.—No Protection used.

"I had bees creeping in my ears last season, under my veil. I would therefore advise putting cotton in, before commencing operations." Bee Journal, vol. 3, page 160.

No, no, friend Hulman, don't advise us to do any such thing. We want to use our ears, so that we can know when our bees are in a pleasant mood.

That veil of yours, please give it to your wife, if you have one. *You* don't need it. No *practical* bee-keeper should wear a veil, or a bee-hat, save in extreme cases. Some pains will then be taken to handle the bees properly; and where this is done, they will keep in good humor throughout the season. I write from many years' experience in handling bees, and therefore know what I have affirmed.

My friend Marvin, of this place, is as successful as myself in handling bees without protection. His experience is also quite extensive, as his apiary is one of the largest in the Western States. It now consists of 300 colonies of very choice Italian bees, and just now they are in winter quarters, and wintering finely. He has no Italian bees that do not show three yellow bands distinctly. Those showing a less number of bands were banished last fall.

To return. We both use wood smoke, and no further protection than what the smoke affords, in our manipulations with the honey bee. We have no trouble in accomplishing with that kind of smoke, all that we desire. Its pungency, when rightly used, will subdue any hive of bees, whether Italians, natives, or the ill-tempered hybrids. Friend Marvin, I believe, keeps a supply of bee-hats, made of wire, for the use of visitors, of whom he has a great many from all parts of the country. These bee-hats are worth many times their cost to him every year. They are first-rate for "caging his visitors," so that they cannot pitch into his choice fruits! for be it known that Mr. Marvin is not only a practical bee-keeper, but likewise an amateur fruit grower. So it seems a bee-hat is of some use.

We have, of course, no use for the celebrated "bee charm," and in this connection let me inform the Journal readers that the discoverer is reported to be dead! I hope, therefore, they will henceforth let him "rest in peace." My informant may be mistaken. If so, we would like to have the report corrected by the "Prof."

M. M. Baldridge.

St. Charles, Ill.

[For the American Bee Journal.]

Centre Passages.

There is much said about bees cutting or making centre passages. It is found that in some hives there are many such passages, in others but few. Many are at a loss to understand how this is? My opinion is that all such passages are made by the bees in their attempts to remove the larvæ the moth. Hence those hives which are most affected have the most centre passages. J. H. Thomas.

Brooklin, Ontario.

[For the American Bee Journal.]

The Economy of the Bee Hive.

If it be a fact that bees can live "for days and even months" without a change of air, it certainly is a wonder worth investigation, and must be accomplished by means of those simple and beautiful laws that a wise Providence has set up to govern the most insignificant as well as the greatest ot his creations; and when we come to understand it, it can but increase our admiration of the infinite wisdom and skill of that Great Being, who brought such perfection out of chaos.

All animated beings require the same kind of air to support life. Without it they could not exist. That air surrounds us on all sides. Chemists tell us that it is composed of two gasses, oxygen and nitrogen. One atom of the former to two of the latter. It is only the oxygen we need in breathing. When we inhale air into our lungs it is brought in contact with the blood. The air parts with the larger part of its oxygen, which is absorbed by the blood, and receives in exchange another substance derived from the food we eat and called carbon, and another called hydrogen; so that when it is exhaled it consists of nitrogen, oxygen, carbon, and hydrogen; but they are not all united in one substance or compound. The oxygen has united with hydrogen and has produced vapor or water, and with the carbon and the result is carbonic acid. The air we inhale is nitrogen and oxygen; the air we exhale is water, carbonic acid, and nitrogen.

This carbonic acid gas is poisonous and destroys the life of any breathing creature even when mixed with a large quantity of common air. It will put a light out instantly. It has another peculiarity which is singular: its weight. Although only air, you can pour it from one vessel to another. When it is breathed out being mixed with the hydrogen and nitrogen which are light and being expanded by being warm, the volume of breath is lighter than the common air, and ascends; but it cools and by degrees separates from the other parts of the breath, and sinks to the ground.

Everything living breathes the same kind of air, with the same results. Warm blooded animals, men, beasts and birds, breathe a great deal. Cold blooded animals, snakes, lizards, frogs, fishes and some insects and small vermin, breathe very little. Bears, dormice, and the bird called the martin, and most insects, become torpid in winter, and during that time scarcely breathe at all. They become cold, and their breathing and the circulation of their blood stops.

Now let us return to the bees. They are stopped up in their hive so that no fresh air can reach them. They breathe the same air over and over; all the time converting it into this carbonic acid, which gradually rises like an inundation, and the last one of them would die. Is it so?

Science to be of any value must prove things as they actually exist; but the deeper its researches, the stronger the proof that we live in a world of paradoxes, and that creation is to our limited understandings a maze of contradictions. It has by the aid of discovery reconciled many of these, but many baffle their ingenuity and still remain hidden mysteries. One thing is certain, that the greatest contradictions, and the most opposing elements, all combine together and produce results perfectly concordant.

For ages fishes were kept as pets. They were placed in vessels of water, but they could only be kept alive by the most careful attention. Daily the water had to be changed or the fishes soon died, and for the same reason that we have been trying to explain. They have to breathe as well as other animals, though not so much, and they obtain their air from the water. When they breathe over all that they have in their limited cage and convert it into poison, they die like any other animal deprived of pure air. New discoveries have remedied all of this difficulty. Now they can be kept for years in the same vessel without a change of the water in which they live. This is accomplished by the application of one of those simple laws of nature, of which we spoke.

Plants breathe as well as animals, but they take in through the pores of their leaves this very carbonic acid, that animals throw out. The sap absorbs the carbon and again sets the oxygen free to unite with the nitrogen and restore the air to its original condition. When this was found out the whole thing became easy. It was only necessary to place in the water such plants as would grow there, and the thing was accomplished. The plants would use up the carbonic acid and set the oxygen free to be again used by the fishes, while the fishes in turn would breath the restored air and make a new supply of carbonic acid for the plants.

But there was another difficulty. The excrement of the fishes and the decay of the plants would in time make the water so foul that, it was unfit to sustain life in either fishes or plants. Another beautiful discovery supplied a remedy for that. It was found that snails, and other kinds of small water animals, actually lived on these very things as their only food; and that these little scavengers, made from this decayed and foul matter, became good food for the fishes.

Out of these discoveries originated the *Aquarium*, which has in it all the elements of the reservoir in which the fishes lived; that is, fishes to breathe the air and produce carbonic acid, plants to use the carbonic acid and restore the air, and snails to eat the foul matters that would accumulate, and thus keep the water pure, which snails in turn became food for the fishes to live on.

God did this, not man. When he created the fishes he made an aquarium for them. Was he less mindful of the "little busy bee," when he gave it a habitation in holes in trees, where from the very nature of things, they would be frequently deprived of fresh air for months at a time, on account of snow and ice and sleet closing them up? Experience says not.

The bees produce by breathing carbonic acid, which, if there was nothing to take from it the carbon, would destroy them. There are no plants to do it; but we find in the hive several things that may answer the purpose. The comb, it is well known, is at first pure white, but first turns yellow and then dark, and as it gets older becomes perfectly black. Something must produce this effect. May it not be this very carbon that it absorbs that colors it? It is further known that the older the comb the heavier it gets. This is not only true of the comb in the middle of the hive where the breeding is done, but more so at the top where honey is stored. It may be said that carbonic acid is heavier than the other air and therefore settles below. We have shown that it first rises, from being heated and thus rarified.

The honey may also absorb the carbon. New honey and old honey are very different things in taste and color. So may the bee-bread and also the propolis.

The fact being established that bees can live without fresh air, we can only account for it upon some such reasoning.

But this would not be enough. Bees cannot live without water. Here we are not so much in the dark. We have shown that oxygen and hydrogen are united in the course of breathing, and thrown out as vapor. This is condensed on the solid sides of honey, and on the vacant comb and sides and top of the hive, which are dense and cold, and remains there hanging in globules or runs down in drops among the bees. Thus they are always furnished with water. It is also a wise provision, that it only so accumulates in cold weather. In warm weather there is a class of bees that are called "fanners" or "ventilating bees" that keep a constant circulation of dry fresh air.

It has often been wondered at that bees should plaster the solid sides and top of their hive with propolis. In some very old hives I have seen it nearly a quarter of an inch thick. The wood being porous would absorb the moisture, and they wax it to make it solid and a better condenser. May it not be also to absorb carbon? D. L. ADAIR.

HAWESVILLE, KY., Jan., 1868.

Smart Bees.

One of my neighbors had an old hive of bees that last season threw off three swarms, two large swarms and one small one. The last swarm, after working two or three months, and making considerable comb, but not much honey, swarmed out one pleasant day in the fall, well knowing that they did not have sufficient honey to winter on, and returned again to the parent hive. Who can beat that?—E. W. B. *in Country Gentleman.*

☞Pollen gathered by the bees from Centaurea, (blue bottle), is white; that from white clover, is dark cream color; that from buckwheat, bright yellow; and that from Esparsette or Spanish clover, is brown.

[For the American Bee Journal.]

Bee Hunting.

MR. EDITOR:—Is it possible for one to have bee on the brain? I have been engaged in the culture of the honey bee for twenty years, and have many pleasant recollections concerning them—so much so, that my family sometimes tell me that I have got the bee on the brain. But this I am not disposed to consider serious, unless the sting of my pet should chance to remain. Even then I should not mind it much, as I do not experience any harm therefrom.

I always considered it a very pleasant and agreeable recreation to hunt the bee. To look them out, and trace them to some large giant in the forest, requires at times considerable skill and sharp-sightedness. I have found them varying as to height, from on the ground to one hundred and thirty feet from terra firma. I I have never given up the hunt until found, if there was any show at all. It is a harmless, but not always profitable recreation. Of late years I usually take them down in the log.

I propose to give an account of my short experience in hunting bees on the James, in Virginia. I came there rather late in the fall, remaining in the State until about the middle of July. In looking around I soon ascertained that there were very few swarms there, except in their natural wild state. When getting some sweet gum in the month of November, I noticed the bees gathering the gum as they usually gather pollen. From that source I obtained several lines; but did not find the swarms at that time, as I had no honey, and it was late in the season and rather cool. I concluded to let them rest till spring. In the month of March I noticed bees at work on an apricot tree in blossom. I watched them as they were gathering pollen. From this source I obtained five different lines, of which I resolved to find most or all of them. You may be assured I was on tiptoe, and almost went into ecstacies. Now for the result. Without honey I took one line, and with careful looking found it in an oak limb about twenty feet high, about a mile and a half distant. Now for number two. After a pleasant search of about three hours, I found them about three-fourths of a mile distant, in a stump of an oak tree cut several years before. The stump was not more than three feet high; and the swarm as fine a one as I ever found at that time of year. After a search of about half a day, I found number three in an oak tree, about eight feet from the ground. It was a fair swarm. Perhaps if you had seen me at this time, Mr. Editor, you might might have thought that I had bee on the brain, though you would never have said so. So excuse me, and bear with me a little longer. Number four crossed the river, and as I had no boat I made no effort to find them. I followed the line of number five about half a mile, and found them in a green oak stump about four feet high, which had been cut perhaps two years before. This was a fair swarm.

From another source I obtained another line, starting from near the same place as the others.

This swarm proved more difficult to find. When I looked where they ought to be, they were not there. At last I found them going into a root on the ground and thence into the tree, which was a small oak in an opening. This was far beyond my expectations.

Now for a little extra luck. On the 28th of April, I found and hewed a very fine swarm. In ten days they filled their hive, and seemed almost ready to swarm. At this time I broke out their honey. May 31st, went to see my swarm in the root, when to my surprise, on a bush, about twelve feet from the old stock, hung a young swarm waiting to be hived. I returned to the house, procured a hive, hived them, and they were doing well when I left.

I have lived in the Eastern States, and have been beyond the Mississippi, all the while having an eye to bee-culture, and from what I know and could learn, I should prefer Virginia for a short term of years to raise bees for profit. The winters are short there. A knowledge of the bee could be made to pay in large ratio.

I have wintered my eighty stocks without the loss of any. W. C. Newton.

Oswego, N. Y.

[For the American Bee Journal]

Wintering of Bees in the Open Air.

For many years I have been persuaded that bee-keeping would never flourish as it should, unless some cheap and simple mode could be devised, by which bees may be safely wintered on their summer stands, instead of being placed in special depositories. To say nothing of the cost of such structures, and the great labor and judgement needed for their proper use, they are open to disadvantages which cannot be remedied, even by the most skilful and prudent management. After the bees have been placed on their stands, if the weather suddenly changes, a cold wind springing up and clouds obscuring the sun, it is often found that as many bees are lost as if the colonies had wintered in the open air. Stocks that have wintered well on their stands, are usually more forward in breeding than those of equal strength which have been put in special depositories. When first set out, the latter have a deceptive appearance of strength; for the old and feeble bees which would have died if they had been wintered in the open air, perish soon after they begin to fly.

However successful skilful bee-keepers who have large apiaries, may be with winter depositories, the great majority of those who keep but a few stocks, will never winter them anywhere but on their summer stands.

After years of experimenting, I have devised a cheap and simple plan which promises to effect as great a revolution in the wintering of bees in movable comb hives, as the movable frames have produced in their summer management. By this plan prudent bee-keepers may winter bees in the open air, in hives having movable frames or bars, as well (if not better, all things taken into account), as in any special depository. The plan is applicable to any old hive now in use, and will be made known in ample time to use the ensuing winter. My health and the pressure of other duties, will prevent either myself or son from replying to any letter of inquiry on this subject. If the plan should be patented, all parties owning the right to use the Langstroth hive, will be entitled to use this plan, without any charge, as long at least as my extended patent is in force.

L. L. Langstroth.

Oxford, Butler Co., Ohio.,
March 30th, 1868.

[For the American Bee Journal.]

Wintering Bees.

Mr. Editor:—If all bee-kepers read your valuable paper with the same interest that I do, I am sure they will endeavor to contribute something for its pages; and the more the better, as I am sure you will select the best for the greatest number of your readers.

As my success in wintering bees, and how I do it, may be of interest and value to others, I communicate it for their benefit; and if any have a better plan, let us have it, for it is certain that the loss in wintering bees, in this section of country at least, is more than from all other causes combined.

After experimenting in different methods of wintering, some of which were better than an out-door exposure and others not so good, I judged it more economical to build a *permanent* house for this purpose. Selecting a place convenient to my apiary and of easy access, I commenced operations by making an excavation seven (7) feet wide, eighteen (18) feet long, and three and a half (3½) feet deep, and bricked it up level with the ground, except a space in one end for a door. On this wall I built the house, with side walls two and a half (2½) feet high; with good tight roof, and two ventilators therein, one at each end; with tight double-doors at one end. After lathing and plastering it entire on the inside, and giving it a cement floor, I considered it complete, sufficiently roomy for about fifty stocks of bees, with a passage way between the ranges of hives, so that any of them can be seen and attended to at any time. When setting in my bees for the winter, I take off the caps of the hives, and put a straw mat over each.

The advantages which a house of this kind possesses over any other are, 1st, an even temperature, or so much so that you can regulate it at will. 2d, ease of access at all times; and never fearing any loss from fire, which might occur if they were kept in the cellar of your dwelling. 3d, it provides a convenient place in summer for extra hives, honey-boxes surplus honey, tools to be used about the apiary; and in short, a repository for everything you want just where you want it. 4th, and what I consider of the utmost importance, my bees consume one-half less honey than when wintered on their summer stands.

I know that some claim that bees wintered on their summer stands, will breed earlier and more rapidly. But I have failed to discover it, or see it in that light; and have no difficulty in making my bees breed as early as I want them to do. This much I do know, that, taking one year with another, more than one-half of all the stocks wintered on their summer stands, perish from cold and starvation, unless in *very large* hives. I mean in this section of country. Perhaps some would set it higher than this. I have now kept bees in this house two winters, and have lost only one stock, and that died from the want of honey, through my neglect. In the others the bees and combs were in the very best condition.

For one, I think it pays to have a suitable place to keep bees in the winter; and I care not what the hive is, or whose patent, if it is a *bee hive* fit to be used at all. We cannot keep temperature as we would like it in this cold disagreeable climate, without some other protection, notwithstanding different venders cry *Eureka*. B. J. Hoxie.

Cooksville, Wis.

[For the American Bee Journal.]

A Safe and Perfectly Reliable Method of Introducing Italian Queens, even by a Novice.

When the Italian queen arrives, put her into the wire cage sent with her, and tie firmly over the end of it, a piece of old factory cotton. This should be done in a close room, so that if the queen happens to fly, she cannot escape. Now find and destroy your black queen; then cut out from a card of comb a piece the size of the queen cage, but one inch longer; insert the cage so that the bees can get at the factory cotton. The cage should always be inserted near the centre of the combs, or where there is brood, so that the bees will be sure to cluster about it. Within forty-eight hours, they will generally liberate her, by eating through the cotton, and she will be all right, no further attention being required. But should it so happen that at the end of forty-eight hours they have not eaten her out, a small opening may be made through the cotton with a pen-knife, that the bees may be able to enter the cage if they wish. It is well to smear the cage and the cloth with a little honey, after it is put into the comb, to attract the bees to it. A few drops are sufficient.

This method may be practiced at any season of the year; and the cage with the Italian queen may be inserted immediately on removing the black queen.

If the bees are in a box-hive, they must be driven out, the old queen captured, the caged queen inserted between the combs, and the bees returned. In searching for a black queen in a frame hive, it is better to smoke the bees only a little, because much smoking will frequently cause the queen to leave the combs and run on the sides of the hive, where it is more difficult to find her. J. H. Thomas.

Brooklin, Ontario.

[For the American Bee Journal.]

On Wintering Bees in the open Air.

In the January number of the Bee Journal under the above head, Mr. Langstroth says:—"Intelligent apiarians are aware that most bee-keepers in cold climates, who winter their bees in open air, are not satisfied with their success in any style of hive yet devised."

It is evident from the above and a well-known fact that ordinary hives are not constructed sufficiently warm to prevent loss of bees from chill, in detached clusters, among the outer ranges of comb, during sudden changes from warm to cold weather, as described by Mr. Langstroth, in the article referred to.

For many years, until recently, it was very generally supposed that all that was necessary for the successful wintering of bees, on their summer stands, in the open air, was to admit extensive upper ventilation—the object being to prevent the creation or retention of excessive moisture in hives in winter. But this was found to admit too freely the escape of the animal heat of the swarm, and consequently was not well calculated to prevent loss of bees from chill or the impression of cold. And I never could believe that to remove the honey-board late in the fall, and substitute "corn cobs," or even a nicely made straw mat, instead of a covering perfectly air-tight, such as is natural for bees to prepare, would add anything to the prosperity of the swarm. For the reason, that the bees, at that season of the year, cannot "seal up" and give it a coating of propolis or bee-glue, which would prevent the free escape of animal heat. Besides, a straw mat, without such preparation, absorbs so readily the moisture arising from the exhalation of the swarm in cold weather, that it soon becomes quite wet, and consequently cold, and often moulds considerable. The absorbant quality of the straw, therefore, is of no use in the hive or mat.

Contrary to the prevailing opinion the coating of propolis given by the bees to the inside of hives constructed of straw or other porous material (thus rendering them impervious to air and moisture), is indespensable; as they are then only in condition to retain the animal heat of the swarm. Thus conditioned, the warm air arising from the swarm, and coming into contact with its warm interior surface is not condensed; and thus the creation of moisture is prevented, and "prevention is better than cure."

Isaac Ide.

Medina, N. Y.

I have known hundreds of cases, where bees which were accustomed to the presence of an old fertile queen in their hive, treated one recently ferilized, introduced after the death or removal of the old one, not only with indifference and disregard, but with as much animosity as though she were a stranger or a virgin queen—either rejecting and destroying her, or becoming reconciled and accepting her only after prolonged resistance.—Berlepsch.

[For the American Bee Journal.]

More Light on the Subject.

George M. Taber, of Iowa city, under date of August 17, 1863, writes me, in substance, as follows:—C. D. Bent, whose present address is Grand View, same State, has been taught *by experience*, that where bees are storing honey rapidly, they will fill two sets of boxes about as soon as they will one. And for this reason :

Bees will not *seal the cells* until the water in the honey evaporates. When they have access to one set of boxes only, several days of storing surplus are lost before a new set can be given them, as the honey should not be removed till the cells are closed, especially when designed for market. They will, it is true, deposit the honey in the main hive ; but this, in many cases, is detrimental to the colony, occupying cells that are needed for brood.

To return :—When the boxes are nearly full, they are raised up and another tier put under them. *Slits* are made in the tops and bottoms of the lower set. By this arrangement the lower tier is full by the time the upper boxes are *ready to seal*. A section is added to the cover, to raise it one tier of boxes higher. Mr. Bent uses eight boxes in each tier. His hives have two portico fronts, and the cover is made longer than those in common use in the Langstroth hive.

To conclude:—From the above it will be seen that two sets of boxes for a hive were used in Iowa, at least two years before the "Mysteries" were rewritten. But that is no proof that the author did not use them till that year. Nor is the letter, given above, any proof that this plan of getting honey was unknown in the West prior to 1863.—Who will give us more light ?

M. M. Baldridge.

St. Charles, Ill.

[For the American Bee Journal.]

Scouts employed.

Do bees just before swarming, or while clustered preparatory to their final flight, send out scouts to select, and guide them to their future home ?

Of this, J, S., under the caption of "*Curious Instances of Swarming*," in the March number of the Bee Journal, seems to express a doubt. Permit me to match his *curiosities* of bee behaviour with an instance not less curious, which very clearly indicated that the above query should, in this case at least, receive an affirmative answer.

During the swarming season of 1866, having several Langstroth hives containing dry combs, I prepared them for the reception of issuing swarms, and placed them in my bee house to await calls for their use. One day while occupied about my apiary, I observed strange bees alighting on one of these hives, located about fourteen feet from the door, and passing in and out as if examining the premises and resolving some important question relative thereto. This they continued to do until I closed the door at evening. Suspecting their object, early next morning I threw the door open, and in a few minutes had the pleasure of greeting the visitors of the previous day. With great assiduity, they continued their examination of the same hive, with an air that seemed to indicate that they felt themselves charged with a mission of great responsibility, and even commenced house cleaning. These proceedings continued until about eight o'clock, when suddenly a respectable swarm made its appearance at the door and passed directly to the hive thus indicated ; and in a short time was quietly domiciled in it.

Very evidently the bees which first came were pioneers, sent out in search of a home for the family about to emigrate ; and having found one which they deemed suitable, they communicated the fact, and then guided the household to the chosen abode.

D. Witter.

Burton, Ohio.

[For the American Bee Journal.]

Scouts, or no Scouts ?

Some persons believe that every swarm of bees, at the time of issuing, have a home selected, and know just where they are going. Others believe that they have to hunt a home, in every case, after issuing. I think that in some cases they have their home not only picked out, but cleaned out ready for use. In other cases, however, judging from the distance they go after issuing, it seems evident that they have to hunt their home as they travel.

I have two cases in point. When I was a boy wild bees were very plenty in the woods. My father one day, in the swarming season, took a walk in the woods, and when he returned told us little fellows that he had found a "bee tree," and that if we would hoe corn well till Saturday we might go with him to cut it. This was on Thursday. Well, on Saturday evening away we went to cut the tree ; but when we got there, father said he could not see them at work, as he did the other day. Yet, as the tree was small, we would cut it at any rate ; which we accordingly did. But to our great disappointment not a bee was in it, though there was a very nice place for them. While we were there, sitting on the trunk of the tree, and my father wondering how he could have been so deceived, (for he said they were working "very strong,") we heard a loud humming in the air, like that of bees swarming. Soon a swarm of bees made their appearance, flew around awhile where the tree had been, and then clustered on a bough near by. My father always believed that what he saw were bees cleaning out the cavity, preparatory to the reception of the swarm.

Again, I have the only Italian bees in this county. Two summers ago, I had a swarm of Italians leave me and go north-west into what is called the Big Woods. The next summer there was a colony of Italian bees found eight miles distance from my house ; and from appearance it had been there about that length of time. These surely did not have that home picked out, in advance, at that distance; though without doubt they were my bees.

Winchester, Ind. B. Puckett.

[For the American Bee Journal.]

Bee-Keeping, and Scouts.

Mr. Editor:—I wish to say that I am very much pleased with the Bee Journal. The March number is worth six months' subscription. I believe it is growing better and better. While reading Novice's anticipations for the coming season, I see that others also have "great expectations" of a good bee time coming, just as I have.

The long winter is almost gone, and we shall soon set the bees out and let them fly. What a humming and buzzing there will be! Beautiful sounds, how I do love to hear them! I have been opening some of my hives, and found young brood in the largest stocks on the first of March. I am expecting some early swarms this spring. I intend letting some of my stocks swarm naturally, and some I shall divide before swarming time. I am going to get some Italian queens, introduce them, and go through all those manœuvers that I find explained in the Journal, for I wish to know how to perform all those necessary manipulations. I am not exactly a novice for I have learned two things in bee-keeping. One is, not to try to winter small or late swarms; and another is, not to get out of honey by selling myself short. If it is possible I will have bees enough to supply the honey that is wanted.

Bee-keepers tell about curious instances of bees swarming and flying away to the woods; and none of them agree in thinking that they have a hollow tree selected beforehand for a home. Now I think this is not always the case, though they may generally do so. The first swarms, with which the old queens leave, appear to know where they are going; but late swarms do not always. Four years ago, this spring, a swarm of bees was seen going past where I live, about nine o'clock in the morning, flying very low and slowly as though they were tired. They went on somewhat less than half a mile, lit on a bush, and hung there while they hunted up a tree to go into. They started comb on the bush, then left and went into a tree about forty rods from the bush, where they were found and taken up in the fall.

Another instance is where, in company with others, we found a swarm of bees, in September, settled on the limb of a green spruce tree, right in the open air. They had built three sheets of comb about the size of a man's hat.

I could give other instances; but enough for the present.

William C. Merrill.

Colebrook, N. H.

☞The consumption of pollen, by the bees, when building comb, promotes the production of wax and effects a saving of honey.

☞Pollen is rarely found deposited in drone cells. The bees probably find a difficulty in storing it in such wide cells.

[For the American Bee Journal.]

Solution of the Query.

Mr. Davis, of Youngsville, Pa., in the February number of the Bee Journal, has related an occurrence of a colony of bees accumulating a large amount of honey and pollen, and not raising a worker or drone: and inquired in what condition the queen was all the time.

We do not know that we can give an answer that will be satisfactory to all; but will relate an occurence that came under our observation last season.

We had removed a queen from a colony, and given it a young one with every appearance of being fertile. We had occasion to look into the hive about ten days afterwards, and to our astonishment found no brood, though the combs were filled with eggs. We noticed that some of the eggs did not look right—some being very small. The queen appeared to be all right. We closed the hive, let it remain about a week, and then examined it again. It had the same appearance as it had at the first examination. Some of the eggs seemed freshly laid, and some had become contracted in size. We thought best to destroy the queen and introduce another.

Mr. Davis' colony may have been in possession of a queen of this stamp. There was, as he says, not a worker or drone reared in the hive, for in the above case not one of the eggs ever hatched. The queen in Mr. Davis' colony may have died, or the bees may have destroyed her sometime before he became aware of their condition.

If others can give a better answer to his inquiry, we should be glad to have it.

C. B. Biglow.

Perkinsville, Vt.

[For the American Bee Journal.]

What a Wasp's Nest is good for.

Bring wax to a boil, put in a layer of wasp's comb, saturate it with wax, and drain it. It makes the best bee feeder—better than boxes or honey-comb.

I shall try it in honey harvest as a substitute for artificial combs, for bees to store honey in. Would it not make a capital comb to put into the comb emptying machine, being so firm and hard? Or, as it will stand heat enough to boil wax, put the frames in a very hot room, and let the honey run out.

You say in your February number that you had given up most of the paper to correspondents. I think there are a great many useful hints among the different articles, and shall be glad always to see such.

I am sorry I cannot, by doubling my subscription, receive the Journal semi-monthly, instead of monthly; and hope soon to see it so patronized as to justify its more frequent issue.

J. M. P.

Buffalo Grove, Iowa.

[For the American Bee Journal.]

Remarks and Suggestions.

As there are many correspondents, entertaining various views and proposing different schemes of management, some practical and some experimental, I suppose one must let his ignorance be known in order to learn something.

I have kept bees for the last fifty-five years, in fact from boyhood till now. I early observed that there was a difference in black bees. One kind was more vicious, being smaller than the other. The other is larger with rings on their bodies, and more docile. I removed to Ohio in 1833. Here I found the same races. The small kind was more apt to desert when swarming, and go to the woods. When kept for a length of time, the first swarms took to the woods; the others staid better.

I live within thirty rods of timber on both sides. I always sell bees when any want to buy. I have always let them swarm, until I obtained the Langstroth hive. I used to be opposed to all patent hives, as I had one that I could get thirty-five to forty pounds of honey from, when honey was to be had.

Now, for the theory of old hives. I always turned up my old-fashioned hives in the apiary, and cut all the drone combs away; and the bees almost invariably built worker combs in their stead. Thus I got what honey the drones would have required for their rearing, and saved what they would eat while living, which in some hives is almost all the workers can gather in breeding time—leaving none for the owners. I did not put boxes in, but let the bees go up in the chambers. Instead of lying out, they would fill the chambers while preparing to swarm, and were thus kept busy; and I obtained some good honey before the swarm issued. Sometimes I used smoke to drive up the bees the second day after swarming, and inserted a royal cell for another hive. By driving the bees up and fastening the cell with a brass pin to a comb, they would swarm on the second day after the young queen was hatched, if the hive was crowded. Sometimes the old queen would get at the cell, and kill the young queen therein. If the old one is about ready to go, she will leave before the young queen hatches. When the young one emerges from the cell, she will destroy those the workers were rearing. In that case there will be no second swarm.

There is very little, if any, useful practice with old fashioned hives, but to drive out the bees into an empty hive and set it on the same stand; then take the hive of brood and remove some strong hive when the workers are chiefly out, and they will rear queens and swarm sooner than if left as they were. But this had better be done by practised hands. I have cut out queen cells and fastened them in hives, the bees of which were lying out heavily, the queen cells being just ready to hatch. When hatched, the bees on the outside went off in a swarm with the young queen.

As to patent hives, there are but few that are of any consequence to the public, only to spend money on and waste time. The moveable frame combs of Mr. Langstroth is the best for practical use. All being made alike, when anything occurs in the colony it can be remedied. If a queen dies or is lost at any time while drones are about, the loss can be supplied by inserting a frame with brood. But if the queen die or is destroyed late in the fall, the hive had better be supplied with one from a colony that has not honey enough to winter, or by uniting the two—thus saving both. All the combs should be carefully preserved for the next summer. They are worth half a swarm, to make artificial swarms with next season. I use Langstroth's hives with twelve frames. I think where a man has too many kinds of hives in his apiary, he is not using economy, as he will often have to adjust parts or change some.

My Langstroth hives have yielded me more honey than any others. I have about one hundred colonies on hand now; and have received over two hundred and twenty-five dollars for honey sold, besides using quite an amount for home purposes. My stocks are mostly Italianized. The Rev. D. Witter obtained two queens of Mr. Langstroth's last importation, from which I have Italianized my apiary. Some have beautiful yellow bands, and some are hybrids, though finely banded. I have before referred to a kind of bees of larger size than the little black bees. Some of our bee-men pronounced them Italian hybrids. But there were then no Italians nearer than Mr. Sturtevant's, in East Cleveland, thirty miles off. I think the disposition of bees is often in accordance with that of their keepers. The little black bee has a peculiar trait to sting; while my others, and my Italians and hybrids, are always peaceable.

I prefer to take frames of brood from one hive and the bees from another, when making my artificial swarms, which does not unduly reduce either stock. Handle bees as little as possible, and with gentleness at all times. If they are respected and not disturbed, mine do not disturb anybody. But my Italians visit some of my neighbors, who are careless with their hives and honey; and these then think the Italians are not strictly honest. I think the Italian bees will run out the old kinds in time.

I wish to ask one question. On making an artificial swarm and failing to obtain a royal cell the first time, another frame of brood was put in, and the bees built a royal cell on the opposite side of the comb next to the brood. Why was it not reared on the brood comb that was put in last, as the royal cell was reared at the last operation?

I think the BEE JOURNAL is just the thing for every one that keeps bees, whether he has few hives or many. J. T. MERRIMAN.

BURTON, OHIO.

Bees are variously affected by different colors. White blinds them, and black is disagreeable to them. Hence the front of a hive should not be painted white; and the bee-keeper should not wear a black dress. Hives when ranged in a row on their stands, in close proximity to each other, should have at least their fronts painted of different colors.

[For the American Bee Journal.]

Italian Bees and Breeding. No. 2.

It is generally known by most bee-keepers having many years' experience, that swarms taken from the woods and located in an apiary with other bees, show superior qualities, and generally run the others out in a few years by being superior workers, breeding faster, swarming earlier and more frequently ; and are better at robbing their weaker neighbors, by keeping themselves strong. The probable reason of their superiority is, they are accidentally well bred, and being the best, are the ones to fly away from persons that don't know how or neglect to keep them. Being located at a distance from their near relatives, they are generally surrounded, in their new homes, by large numbers of drones not near related, that overbalance their own, thus making a good cross, and improving them still more. We may make a sure thing, improving the good qualities of bees, by breeding artificially. Having a queen that produces superior stock, it is best to get another queen from a distance, so as not to be near related, as breeding in and in, will spoil the stock sooner or later, if persisted in. One queen should furnish eggs for queens, another eggs for drones ; and if other hives are near remove all drone cells, or kill the drones in the comb by cutting off their heads before hatching, or trapping and killing after they are hatched. If a large quantity of drones are wanted, place the drone comb in the hive with the drone mother, and after it is filled with eggs it can be returned, for other hives to rear the young drones. Allow all other hives but the two parents to produce neither queens or drones of their own ; but they can supply workers to make the swarms for the young queens from the one parent, fertilized by the drones of the other. That is one way to improve the stock. Choosing with care the dark Italians that some seem to prefer, and working perseveringly for a few generations, they will rival the native blacks, and still be more pure than when imported. By choosing the best qualities of different parents we can improve in the different directions, be it in disposition, working, or color. If the light yellow is preferred to the dark, they can be bred to be a clear yellow, if not so already ; so as to rival the goldsmith's (referred to in BEE JOURNAL), and still be more pure the longer they are bred, if not crossed with the blacks or other breeds. The Devon cattle, the most constant in color of any breed known by me, can be bred a light Richmond cherry red, or the color of the darker morello cherry, by selecting the parents showing those colors and for the attainment of that particular shade of color.

JAMES M. MARVIN.

ST. CHARLES, ILL.

We ought never to know any more about nature than we can observe. We *know* what we have *observed*, and not a jot more ; and if we think that we do, we are in error.—MUDIE.

[For the American Bee Journal.]

The Color and Fertility of Queens.

Last summer, while raising queens, I started a lot of cells in a queenless colony. These were removed as soon as sealed over ; and as quite a quantity of the larvæ remained unsealed, the bees were allowed to start more queens from the same sheet of brood. The larvæ from which this second set of queens was reared, was of course several days old, and nearly ready to be sealed over.

The second set of queens, when first hatched, were much darker than those designed for queens from the egg. They were but little better colored than workers. These dark queens improved much in color, after becoming fertile.

I suppose the reason why they were darker, was because they were designed for workers, and were fed accordingly until their color in part was fixed.

It seems to me that such queens must partake somewhat of the nature of workers, and will not be so long lived and prolific as those designed for queens from the beginning.

The foregoing experiment I tried two or three times last summer, and shall continue it another season with an imported queen.

If others have experimented on the same point, and came to any definite conclusions, please give us the results.

J. L. HUBBARD.

WALPOLE, N. H.

☞So long as worker larvæ lie coiled on the bottom of the cell, they are fed exclusively on chyme or digested food ; but when stretched at length in the cells, with head slightly elevated, they are fed with a mixture of pollen and honey, till ready to be capped—though it is likely an entire change of diet is not made suddenly.

Queen larvæ, on the contrary, as usually found in what are called pre-constructed cells, are fed exclusively from first to last—from the egg to the capping—with chyme or digested food.

The coloring matter of pollen shows itself plainly in the worker larvæ, soon after the change of diet takes place. But Prof. Leuckart could not, by means of the microscope, detect any coloring matter in the chyle-stomach of a queen larvæ taken from a pre-constructed cell. Whether a worker larva fed with honey and pollen for several days, then selected for the production of a queen, and re-fed with chyme or digested food during the remainder of its larval life, would exhibit the result of such feeding, we are unable to say. Prof. Leuckart's attention does not appear to have been directed to that point.

In as far as knowing it is concerned, any one of the kingdoms of nature is every man's kingdom, if he will but come and conquer it. The conquest is a conquest without labor, too, for we have only to wait with patience, and notice with attention, and nature does all the rest.—MUDIE.

THE AMERICAN BEE JOURNAL.

WASHINGTON, MAY, 1868.

☞ THE AMERICAN BEE JOURNAL is now published monthly, in the City of Washington, (D. C.,) at $2 per annum. All communications should be addressed to the Editor, at that place.

We have received from Mr. Edward Harrison, now residing in Frederick, Maryland, one of his newly patented Bee-Feeders, referred to in the April number of this JOURNAL. It is a simple and ingenious contrivance, by means of which colonies deficient in honey can be readily supplied at any time, without danger of attracting robbers.

Alsike Clover.

A report on Alsike clover, made to the Board of Agriculture of the State of Maine, gives the experience of Calvin Chamberlain, in its cultivation for several years. He says:—"It is hardy and more permanent than red clover; it branches much more, throwing out many stalks from one root, thus affording a good crop with thin seeding; it bears cropping well, thus proving its adaptibility to pasturage; and it continues in a condition to be cut longer than any forage plant that I know. I believe it to be the best honey-plant in the world. A field of Alsike clover is the best patronized bee-pasture I have ever seen, exceeding that of an orchard in full bloom. I am sure that in a neighborhood of Alsike clover fields, bee-keepers would not be searching for other plants for their use."

Alsike clover may be advantageously sown with spring barley or oats.—*Seed is advertised on second page of cover.*

The usual annual meetings of bee-keepers in Germany were deferred in 1866 and 1867, on account of the then disturbed state of the country. It is now, however, announced that the General Convention will assemble in the city of Darmstadt, in September next, though the days of meeting are not yet determined. These conventions are usually attended by the most eminent and experienced apiarians, and the debates are always interesting and instructive. The Paris Exposition was a failure, so far as bee-culture is concerned—the business being as yet one of subordinate interest in France. The case is otherwise in Germany, and visitors who may be attracted to the Darmstadt convention and exhibition will hardly come away disappointed.

There are two communications in this number of the BEE JOURNAL which we would specially commend to perusal and inward digestion of the anti-bee portion of the good people of Wenham, to whom we shall feel bound to pay some attention on all suitable occasions. As they are somewhat behind time, we must help them to catch up again.

One of those communications shows to how great a distance swarms will sometimes wend their way, when in quest of a new home; and from it we may fairly infer that bees do not restrict themselves to narrow limits, when impelled by instinct to explore the outside world in search of nectar. The other furnishes an instance where a single apricot tree in blossom was visited by bees from five different sources, and from distances varying from half a mile to at least a mile and a half. Now we presume that all the bees in that neighborhood are not "located flying about" in the town of Wenham, like a certain "crowing robin" we once heard of; and how hopeless an undertaking must it therefore be for the citizens to keep themselves free from such annoyances by resolutions of a town meeting! Depend on it, so long as they are slovenly or slatternly in the management of their kitchens, their pantries, their grocery shops, and the like, bees will find their way among them; and may then prove to be troublesome to cooks and compounders of comfits.

Mr. Köhler's process for controlling the fertilization of queen bees is not likely to become available to American bee-keepers this season. The process is to be kept secret in Europe for the present, and till a satisfactory sum is secured to the discoverer; and the price asked for communicating it for the benefit of American bee-keepers, is two thousand dollars in gold, payable in Europe. A fund is now being created in Germany, for Mr. Köhler's benefit, by voluntary subscriptions among bee-keepers. We have seen a list of contributors in February, embracing the names of forty-eight individuals and firms, amounting in the aggregate to about one hundred dollars. Nearly one-half of the contributors subscribe sums varying from fifty-five to seventy-five cents each; and the highest sum, in any case, is under twenty-five dollars. It does not seem from this as if the fund would be large, or very soon made up if meant to be so.

We learn that several American inventors have their attention directed to this matter; and it may be that home-bred ingenuity will prove itself able to devise some convenient process equally efficient.

Extract from a letter, *dated*,
LIGHTSTREET, *Columbia Co.*, *Pa.*,
April 15, 1868.

"If Mrs. Allen Tupper, Mr. Adam Grimm, Mr. H. A. King, or any other person largely engaged in the bee business, should come east the coming season, we would be pleased to have them call on us, or stop with us a day or two. By notifying us in time, we would bring them from the depot, and return them when desired, free of charge. H. W. CREASY & Co.

[For the American Bee Journal.]

Objections Answered.

A correspondent in the April number of the JOURNAL thinks that the honey-comb-emptier is objectionable, because people in his vicinity will not buy honey in a liquid state, except at a low price. Perhaps they never had it thus offered free from the coloring given in extracting it from old dark comb (and mixed with bee-bread) either by heat or pressure. We find no difficulty in disposing of all we have in a liquid form, either at home or abroad.

But even if it would not bring so high a price with him, let us ask if he can get as high a price, or any good price, for his honey in such comb; and also whether he cannot see saving enough in *using* this emptied comb, to be refilled in upper storage receptacles, to pay any difference in the selling price of the honey. Old comb is the best for this purpose.

The tendency of honey to candy is also urged as an objection. This has some force. We find that honey taken out of the comb last June and kept air-tight, is still as limpid as at first; but that honey taken out in December candied. Therefore we propose to empty the combs as fast as filled, and by putting the honey in air-tight vessels, do not apprehend any trouble. If it does candy, opening the jars and setting them in water which can be gradually heated, brings it back to the liquid state; and none thus treated has re-candied.

We shall be able io secure, by the use of the machine, our share of honey from the fruit blossoms, which every bee-keeper knows to be of a peculiarly delicate flavor; but which, without the machine, cannot be safely and profitably taken from the hive.

JAMES T. LANGSTROTH.
OXFORD, OHIO.

Hasty observers frequently fall into error, by attempting to found a fact upon an inference, instead of drawing an inference from a fact.

[For the American Bee Journal.]

Foulbrood in Iowa.

MR. EDITOR:—I see that Mrs. Tupper calls for an explanation of the fears expressed by Mr. Baldridge that there is foulbrood in some of the apiaries of Iowa. I may state that it is a fact that there is foulbrood in that State, at least in Clinton county; and it is spreading very rapidly. So I am told by residents in the neighborhood where it exists. It is spreading by the bees of strong colonies robbing weak stocks reduced by the disease.

If Mrs. Tupper had been at the Iowa State Fair she could have seen foulbrood, without going more than twenty rods from the enclosure of the fair grounds, as there is there an apiary badly affected with it.

I will endeavor to explain how it is supposed the disease was first introduced. Some boys found a bee tree and cut it, securing the bees, and putting them in a box hive. They then placed a thick cloth over the bottom and carried them home. On reaching home, however, most of the bees were dead. These were thrown out on the ground and soon began to decompose. Neighboring bees then gathered the honey that was in the honey-sacs of the dead and decomposing bees. Foulbrood was not discovered for some time after that, nor was its character known when observed, though suspected by some; but some of the comb with dead brood was sent to Mr. Quinby, who pronounced it foulbrood.

As to the fears that it was introduced with Italian bees, they are entirely groundless. It was discovered before any Italian bees were brought to that part of the country.

If Mrs. Tupper or any one else wishes for more information about the matter, I would refer them to Mr. David Hess, Lyons, Iowa, as he was the first to discover the disease, and lost some fifty swarms by it. He can probably state the number of apiaries affected by it, and how long ago it was discovered. I know only a few apiaries in which it exists.

Should any still doubt that there is foulbrood in Iowa, they can see for themselves if they attend the next Iowa State fair.

R. R. MURPHY.
FULTON, WHITESIDE CO., ILL.

[For the American Bee Journal.]

How to Feed Bees in Langstroth Hives.

In answer to Mr. Hunter's inquiry, I would say that I found, this winter, the following to be the best in practice:—Take a frame of empty comb, lay it on a pan and pour your liquid feed into the empty cells until full; now turn and fill the cells on the other side; then stand it upright over the pan, to drain. When drained enough, insert it in the hive.

JOHN M. PIERCE.
BUFFALO GROVE, IOWA.

[For the American Bee Journal.]

Requisites of a Good Hive.

Will any one improve a frame hive to such a degree as to have all the following advantages?

First.—That we can approach close to where the main body of the bees are breeding, with the surplus honey receptacle, as in Langstroth's shallow form of hive; and in which, at the same time, the bees may store honey enough in the main body of the hive, directly above them, to winter on. We are perhaps all aware that bees can get at their winter stores better, in cold weather, when placed directly above them, as in the case of their natural habitation, the hollow tree.

Secondly.—A hive of adequate size, but not containing more than eight (8) comb frames; as even a strong colony will not, in winter, occupy more than seven or eight combs at any one time.

Thirdly.—With all the above, the hive should be simple in construction, and not cost complete more than two dollars.

Should no one else propose a hive with all the above advantages, I will give a description in my next communication, of one that combines them. S. B. Replogel.

Martinsburg, Pa.

[For the American Bee Journal.]

Mustard for Bee Pasturage.

Last season I sowed an acre of mustard. It came in bloom about six days before the white clover. I think by early sowing, on rich, dry land, it would blossom ten days before white clover. Bees worked well on it in the forepart of the day. I think the honey evaporated from it rapidly in clear warm weather. As I knew of no market for the seed, I plowed it under, and sowed buckwheat upon the ground. It was what is called white mustard.

I had growing on my farm a bunch of what is commonly called motherwort. It produced an abundance of flowers, and I noticed when the weather allowed bees to be out, that it was always covered with them. Will it furnish good honey? It is a very bitter herb, but I do not know its botanical name.

I wish to get a pure quality of Alsike clover seed. Any quantity up to sufficient to seed two acres. Can you inform me where it can be had?* A. Stiles.

Genoa, Ill.

* Advertised by J. P. Bartholow in the Bee Journal for this month.

The Baron of Berlepsch says that the most remarkable instance of extraordinary fertility in a queen bee within his experience, was that of one in his apiary, which belonged to a very small swarm found on a willow tree in the summer of 1853. She survived her fifth summer in 1857, and at a moderate estimate must have laid at least one million three hundred thousand eggs in the course of her life.

[For the American Bee Journal.]

Answer to Questions by Querist.

In the Bee Journal, current volume, page 128, Querist desires to know "the best *size* and the best *form* for hives."

First, as regards size, my opinion is that a hive should contain not less than two thousand cubic inches inside of the frames, no matter what the climate may be, warm or cold.

My reasons are, that such a hive contains no more breeding space than will frequently be used by very prolific queens, especially Italian and hybrid queens. My hive contains about twenty-one hundred cubic inches, and my Italian and hybrid queens frequently fill every card of comb with brood, except a small portion allotted to honey. Therefore, I consider that a hive containing less than two thousand cubic inches would frequently limit the brooding capacity of the queen.

Again, it will be understood that in a small hive—one much less than the above-mentioned size—a queen during the breeding season fills all the combs with brood, so that little honey can be stored. Such stocks are almost sure to be short of honey for winter wants, if the fall honey harvest fails; as they cannot lay in a winter stock for want of room, until the breeding season begins to decline. But in a hive containing two thousand cubic inches, there will at all times be enough for winter wants, except where queens are more than usually prolific. Hence, stocks in such hives are not so likely to be affected by a failure of the fall honey harvest. I agree, also that a frame hive had better be a little longer than is actually needed for breeding, and the storing of honey for winter use. For if a hive is found to contain too much honey in the fall, it is easily removed. Or if, when spring comes, some stocks have more honey than is requisite, others are sure to require supplies. Then by exchanging cards of comb, these stocks that are short of honey can be at once supplied. Such are my reasons for advocating a hive containing two thousand cubic inches, as the proper *size*. Are they satisfactory? The best *form* of hive some other time.

J. H. Thomas.

Brooklin, Ontario.

The number of days in a season in which bees gather more than is consumed in breeding, or by young bees which gather nothing for about the first ten days of their existence, is more limited than most persons suppose. Some seasons it is less than a fortnight. Feeding swarms weak in stores to enable them to pass the winter in safety, should be done as rapidly as possible after the queen has ceased laying in October; otherwise they will consume much in rearing young, when their population may be already sufficiently strong. By feeding regularly and sparingly, I have kept young queens laying, more or less freely, until the middle of November.—*E. Parmly, New York.*

The *Southern Ruralist*, published at Tangipahoa, Louisiana, and we believe the only agricultural paper published in the south-western section of the country, commences a new volume, much improved and enlarged. It is well edited, and deserves to be liberally supported in its efforts to make the southern people "self-reliant, self-respecting, and self-supporting," by "an energetic, judicious, and prompt development of their agricultural, manufacturing, and mineral resources."

Mr. Adam Grimm, of Jefferson, Wisconsin, sent us by express, an Italian queen bee and a few workers, in a box two and a half inches long, two inches broad, and one and a half inches high, made of one-quarter-inch pine, with four ventilating slits. The queen arrived safe, and as it is stated that, though she lays freely, her eggs do not hatch, we shall endeavor to ascertain the cause of that peculiarity, if we succeed in preserving her.

[For the American Bee Journal.]

Upward Ventilation.

In the March number of the BEE JOURNAL, page 169, vol. 3, in the article "Water for Bees," Mr. F. H. Miner condemns upward ventilation. If he is right, will he explain the following:—

Last fall I left a swarm out of doors to test that very point. From Christmas to the 20th of January, we had bitter and steady cold weather. On the 20th I examined the swarm. They were all right and lively. I then shut them up, and closed the nine holes in the honey-board, thus stopping all upward ventilation. Four days after I examined them again, and found my bees dead, with frost all over the hive, comb, and bees. All the rest of my bees, having upward ventilation in just as cold a place, but not exposed to the winds, came out safe, with very few dead in the hives this spring. As my neighbors have lost half of the bees they had last fall, from the same cause (or attributed to it), will Mr. Miner inform us what killed our bees? JOHN M. PRICE.

BUFFALO GROVE, IOWA.

In the orchard-house of Stephen Morris, Esq., near Philadelphia, where peaches are grown by the bushel in fifteen inch pots and eighteen inch tubs, the gardener attributes much of his success to the agency of bees in fertilizing the blossoms. He places a hive in the house as soon as the flowers begin to open, and the bees are kept there till the flower leaves of the blossoms drop.

[For the American Bee Journal.]

Some of our Personal Observations.

FIRST.—*Concerning more than one queen in a hive.* We notice that our friend J. H. Thomas, of Brooklin, Ontario, seems to think that two queens will not be permitted to live in *one* hive, *strictly speaking;* but that the space, whether in a hollow log or box, must be so constructed by nature or art, as to be virtually two hives, for the continued existence of two queens in close proximity.

As I have some experience in opposition to this, I will relate it. About the year 1853, I purchased of a neighbor a colony of bees in a very large box hive, say about eighteen inches square and twenty-two inches long. This colony he said was fifteen years old, and had never failed to swarm annually two and and sometimes three times, during that term. I kept it two years, but got no swarm, but such a mass of bees lay out upon it all summer the last year, that I made up an artificial swarm by removing the bees on its outside. At the close of honey harvest in 1855, I took up the bees, which were now few in number, and found in the hive three living queens, that appeared to be superannuated or slightly crippled, and one lively smart queen (to appearance). How long these queens had been there, I am not able to state; but that I found them there, is a fact witnessed by several persons.

SECOND.—*Concerning Honey Boxes.* I make mine to hold from eighteen to twenty pounds each, and without any bottom—taking off the the honey-board when I put the boxes on. Each box contains nine small frames, four of which just fill one of the large frames in the hive. I put a small piece of worker comb on the underside of the top bar of each frame, before putting them into the boxes. In this way I have had a swarm make forty pounds of box honey in about eight days.

The supers thus get the advantage, first, of all the warmth of the hive, so that the bees will work in boxes both earlier and later in the season, and are not checked by sudden changes of weather. They also, second, have a perfectly free pass from the hive to the supers; as it is virtually a simple upward extension of the hive.

Third, the honey being built in little frames, four of which just fill one frame of the hive, gives a chance to feed with box honey any swarms that may need food. These little frames are also just right to put into little nuclei hives to raise queens with, and thus save the cutting up of larger combs; for by simply filling two or three big or hive frames, with the little frames and inserting them in the body of the hive, we can soon have them filled with brood. They can then be removed to the nuclei hives, putting one frame of brood to each nucleus, with one of honey and one empty or containing empty comb, and we have a nucleus sufficient for a pint or a quart of bees. And, fourth, by filling the two outside on each side of the hive with the little frames, and letting the bees fill them with honey and cap them, we can then remove them to the boxes for market; and thus very much increase the amount of surplus honey, as it is well known that bees will store honey much faster in the body of the hive than they will in boxes.

Giles B. Avery.

Albany Co., N. Y.

[For the American Bee Journal.]

Artificial Comb Guides and Frames.

Editor Bee Journal:—As your valuable paper is composed in part at least of contributions from bee-keepers, I have concluded to send you an item that I think will be of considerable value to my apiarian friends who use the movable comb hive, especially to the farmer who wishes to make his own hives. As the triangular comb guide is somewhat difficult to make, I have hit on a plan far more simple, and, as I claim, much better. It is simply a square strip tacked on the under side of the top bar of the frames—say a strip ¼ by ⅞ of an inch, tacked on so that the width extends downward. In experimenting with moveable frames, and using the triangular comb guide as described by Langstroth and others, I found that frequently the bees would leave the sharp edge or square corner of the frame, and then cross to the opposite side of the frame, which of course makes the comb much waving or crooked. But since substituting the strip I have not been troubled in this way; for if in building the bees do pass from one side of the strip to the other, it is only a quarter of an inch instead of seven-eighths of an inch deviation.

I will now describe my manner of making and the material used. I simply use common plastering laths, which are commonly about an inch and a half wide. I rip them in two, making one strip wide enough for the top of the frame, which I make seven-eighths inch wide. The narrow strip that falls off makes the guides and also strips for the bottom of the frame. I take off the rough of the lath for the top of the frame; the rest need no dressing except to size the strips for the guides or bottom. The lath, when ripped in this way, also makes the ends of the frame. I also prefer for my use a center piece nailed in the frame, the same as the ends. This makes the frame more solid, and secures the comb from being broken while the frames are handled.

Feeling confident that this only needs a trial to be appreciated, I drop it for the readers of the Journal. I will further say that if, in connection with the frames you will use partition boards, to contract or enlarge the size of your hive, to suit the strength of your colony, it will be an additional help in securing straight comb, a good stock, and surplus honey.

Samuel May.

Eddyville, Ohio.

The *fanning* of bees at the entrance of the hive is chiefly designed for ventilation. At times however, and in other circumstances, it is employed to express either grief or joy—grief at the loss of their queen, or joy on returning home after long continued and constrained absence.

[For the American Bee Journal.]

Are Valuable Patents Selfish Monopolies?

Mr. Editor:—May I be permitted through the columns of your Journal, to say a few friendly words to those opposed to all Patents, as selfish monopolies?

Such opposition was once so common that honest patentees often found it impossible to protect their rights. The late Professor Olmsted, of Yale College, informed me that Eli Whitney, the inventor of the cotton-gin, found it almost impossible, in a trial before the United States court in one of the Southern States, to find witnesses willing to swear that his gins were in public use, while at the very time of the trial, the sound of gins illegally used, was plainly heard through the open doors and windows of the Court House! If after years of fruitless litigation he had not practically abandoned his invention to those who were determined to deprive him of any remuneration for its use, and applied his inventive talent to the manufacture of guns for the Government, he might have died an impoverished man.

Even twenty years ago, to be known as the owner of a patent right, was, by very many, regarded as detracting from a man's good standing in the community. Among intelligent men, this prejudice has nearly if not quite, passed away, and they will cheerfully admit that to no class of persons, is the productive industry of the country more indebted than to honest and capable patentees. It is no exaggeration to say that where one dollar has been paid for the right to use their valuable improvements, at least ten have been realized to the country at large. Few men could afford to devote the time and money needed to make valuable inventions, if they were to become public property as soon as divulged.

Our Government began very early to foster the inventive talent of its citizens, and nearly every civilized nation has, by its patent laws, recognized the importance of doing the same thing.

It is well known that many bee-keepers are illegally using the patented features of the Langstroth hive. Possibly some of your readers are doing this, and perhaps with less scruple because they suppose that I have grown rich by this invention. Such persons will probably be surprised to learn that for the last fourteen years, I have lost at least half of my time, from an affection of the head which unfits me entirely for either mental or bodily labor, and that owing to the numerous infringments upon my rights, after years devoted to studying the habits of bees and improving hives for their management, I am actually poorer than when I begun the work.

L. L. Langstroth.

Oxford, Butler Co., Ohio.,
March 30th, 1868.

When bees are in want of honey, or when they have lost their queen, or when besieged on all sides by the moth worms, they will occasionally desert their hives.

[For the American Bee Journal.]

Shallow Hives.

After using the "broad shallow things" for hives (as Mr. Gallup calls them) for ten years, I must say that I cannot endorse all which Mr. Gallup says of them. We here in Essex county (Mass.), have but little trouble in making our bees build straight combs, and I never have seen but one, in these hives, destroyed by the moths, and this was done while the owner was confined to the house sick. There are hundreds of these "shallow things" used by the bee-keepers of New England; and most of those using them have had good success with them. I never yet found a bee-keeper using them who did not speak well of them. Of course, Mr. Gallup has a right to say what he choses; but we here in this part of the world, do not believe he has fairly tested the shallow hive. I want nothing better for my bees, and do not believe a better hive can be found. Mr. Gould, of Wenham, has used these hives for ten years, and he finds no trouble in making *his* bees build straight comb; neither does he have any trouble in *wintering* bees in them.

Why don't Mr. Gallup tell new beginners what the BEST hive is?

I have sold farmers the shallow hive, and their bees have always done well in them, notwithstanding they do not go near their bees more than once or twice in a year. Some farmers whom I have sold hives to, have had bees in them for seven years, without losing a single stock; and I *know* that they did not trouble them more than twice in the course of the season, *and then* only to remove the surplus honey.

Their bees seemed to do well with no care at all, and pay them a handsome profit. Mr. Gould has about fifty stocks in the shallow hives, which seem to be wintering well. Most of them are in double hives, which I described in the September number of the JOURNAL; and each hive had the winter passages made through the combs, and has a box of dry corncobs over the frames.

I have examined my hives once a week during the winter, and found the bees clustered snug to the cobs every time. I find that the cobs make an excellent winter passage for the bees, to pass to any part of the hive. I sometimes found the bees clustered near the entrance; and then again I would find the same stock near the rear. Will others who have used the "shallow things," give the readers of the JOURNAL their experience with them?

WENHAM, MASS. H. ALLEY.

[For the American Bee Journal.]

Fertile Workers.

MR. EDITOR:—In October last I deprived three colonies of bees of their queens, for the purpose of introducing Italians. Five days later I removed all the queen cells that had been started, and not having received the Italian queens as soon as I expected, left the colonies about three weeks longer. At the expiration of that time I discovered that two of the colonies had *fertile or drone producing workers.*

Will not bees ordinarily, if deprived of the the means of procuring a fully developed queen, do all they can in that direction, and by feeding "royal jelly" to partly developed workers, so change their character as to make them lay drone eggs? This seems natural, and my observation in the instance narrated above, appears to afford strong corroborative evidence. If it is really true, then, in our efforts to Italianize a colony, unless a queen can be supplied, immediately, the young queen cells should not be removed until about the tenth day after the removal of the reigning queen.

Will you or some of you contributors ventilate this matter a little? POLO.

☞Fertile workers evidently originate in various ways, and various hypotheses have been proposed to account for their appearance. The explanation above accords substantially with the views of Huber, Dzierzon, and Von Siebold. Von Berlepsch, however, thinks they are sometimes produced in colonies in which no queens were reared or attempted to be reared, for several years; and in which consequently no worker bred contemporaneously with a queen could have been found. He cites a case which came under his own observation, and which he thinks confirms that view, but it does not seem to us to be conclusive.

[For the American Bee Journal.]

Polanisia Purpurea, and Cleome Integrifolia.

These plants, described on pages 50 and 71, Vol. 3. AMERICAN BEE JOURNAL, seem to be very much alike. Both were brought from the Rocky Mountains, and are similar in growth and appearance, according to the descriptions given. I have received a package of seed of *Cleome* Integrifolia and can see no difference between it and the seed of Polanisia Purpurea.

An old edition of Wood's Botany describes Cleome and Polanisia as two species under the same order, which shows that they are probably very near alike.

As I have sown the seed received I can probably detect the difference, if any, next summer.

I have fed some of the seed of the Polanisia purpurea to sheep, and find they will eat it; though they do not like it as well as corn and oats. The seed is bitter, and I cannot tell what the effect would be to feed a large quantity of it. The leaves and stalks are of no account for forage, as one paper has asserted.

Will not some practical botanist inform us in regard to the difference between these plants? Also the probable value of the seed?

I have remaining a quantity of seed of the Polanisia purpurea, and will send a package to any one who wishes to try it, if a small sum is enclosed to pay expenses of postage and putting up. J. L. HUBBARD.

WALPOLE, N. H.

AMERICAN BEE JOURNAL.

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[From the German of Rev. Geo. Kleine.]

Practical Bee-Culture.

You will only be able to aspire to the title of an intelligent bee-keeper, when, in the management of your bees, you shall have made yourself independent of their lunes and whims, and have learned so completely to subject them to your control as to feel assured that they will accommodate themselves to your plans, whatever system you may adopt. To this, however, you can only attain by employing the method of artificial swarming, which, as now practiced, must unquestionably be regarded as the greatest advance yet made in practical apiculture. The art of making artificial swarms is indeed not new; but it has received its full developement only since the introduction of the Dzierzan system—which has enabled bee-keepers to multiply colonies by rule, and effect the designed increase at the most propitious period.

But, if the bee-keeper would operate with confidence, assured that the artificial colonies he undertakes to establish shall not prove to be miserable abortions, he must not work at random or be as one groping about in darkness. He must acquaint himself with the nature and habits of bees, understand thoroughly their peculiarities, and learn to know the circumstances under which swarms will prosper or perish, and be able duly to appreciate the surrounding influences, climatic or local, which may affect the condition of his apiary. Possessed of such qualifications, he will readily be able to adapt his processes, when multiplying stock, to the requirements of his situation — thus guarding against partial disappointment or utter failure.

Artificial colonies may be formed in various modes; but most simply and easily by means of a fertile queen, to which an adequate number of workers are apportioned. Time is thus gained, which is always an important element in bee-culture; and we may have our increase in a prosperous and advancing condition, at a period when it is wholly premature and unsafe to attempt artificial multiplication in the customary manner.

Should you unexpectedly come into possession of a fertile queen early in spring, long before natural swarms might be looked for in your locality, she should of course not be destroyed, but reserved to become the prolific mother of an independent colony, and be immediately put to active service. A colony formed by her aid will, if properly cared for, richly repay the attention it requires and receives, though for a short time it may involve some trouble. The bees to be allotted to this queen you will take from several of your most populous stocks, which thus deprived of only a comparatively small number of workers each, will hardly perceive or feel the loss—a loss moreover speedily made up by the maturing brood. To procure these workers you have only to open a hive, take out a comb well covered with bees, but not containing the queen, shake from it, into the hive designed for the new colony, such portion of the workers as you judge can well be spared by the colony to which they belong, and replacing the comb and closing the hive, proceed in like manner to deprive other colonies, till you have secured workers enough for your purpose. The hive into which the bees thus collected are shaken, should be furnished with two or three empty worker combs and one containing honey.

Though a fertile queen will almost invariably be kindly received by workers thus collected from different stocks, it is nevertheless safest to introduce her among them in a cage, leaving her in confinement until it becomes manifest that she will be accepted by her new associates. But a colony thus formed must be sent to a location at least a mile distant from your apiary; because the older bees, accustomed to a particular range of flight, would for the most part return to their old homes. Soon after reaching the selected spot and placing the hive in position, allow the bees to fly; and if the weather be favorable for a general issue, feed them with diluted honey to encourage nearly the whole mass of workers to take wing. They will thus at once acquaint themselves with the surroundings of their new home, and thenceforward regard themselves as one common family, though collected from many different swarms. The queen may soon after this be liberated, unless some of the workers make hostile demonstrations against her in the cage. The earlier in the season an artificial colony is formed in this manner, by the aid of a fertile queen, the more frequently or more plentifully must it be fed, unless it can at the outset be adequately supplied with honey in the comb. It must also be carefully watched until the spring has fairly opened, and the workers can support themselves by their own industry. For this purpose it will be convenient if the hive be brought back to your own apiary, three or four weeks after the first removal.

If I obtain a supernumerary queen later in the season and at a more favorable period, I adopt a more simple and yet equally efficient process for making an artificial colony, which will not require removal from the home apiary. It is a more convenient mode, and one that rarely fails. I prepare a hive by putting in it four frames of worker comb, and place the queen, securely caged, between the two central frames. Then set it in the place of one of my most populous stocks, which latter I remove to some other location in the apiary. The foraging bees, returning to their accustomed home, find matters greatly changed indeed, and at first reluctantly enter the hive allotted to them; but finally, finding no alternative, yield submissively to the inevitable, take possession of their new quarters and go to work. For several days nearly all the bees that leave the parent stock resort to the old location and join their companions there; thus rapidly increasing the working force of the new colony, which having no brood to nurse, speedily accumulates stores. I usually liberate the queen on the evening of the second day. She promptly assumes the duties of her function, supplying the cells with eggs; and in three weeks, I have a fine strong independent colony, when perhaps most of the other stocks, allowed to indulge their own whims, have yet made no preparations for swarming.

The removed parent stock, which thus unconsciously supplied the bees required for the artificial colony, will for some days appear weak and inactive, as nearly all the old bees which leave it fail to return. But no uneasiness need be felt on that account. Bees enough will always remain to take care of the brood and discharge the required domestic duties; and as all the young bees adhere to the new location, and numbers are daily emerging from the brood cells, the population will soon be replenished. A strong swarm has indeed been virtually taken from it, yet the hive will really be in a better and more thriving condition, than if it had lost both bees and queen by natural swarming.

That for such transposition only populous stocks can be selected, and that a fine clear day when the workers are busily gathering honey must be chosen for the operation, need hardly be mentioned, as that is sufficiently obvious. If a supernumerary fertile queen be obtained at an unfavorable period, or when the weather is unpropitious, it will be advisable to adopt the previously described method—making an artificial colony by collecting bees from several hives, and sending the swarm thus formed temporarily to a distant location.

But it ofttimes happens that we have no supernumerary queens at command, when it is desirable to multiply stock. We are then constrained to resort to other modes of making artificial colonies. The following is alike simple and efficient. I remove about one-half of the combs containing brood from the hive I propose to divide, placing them with the adhering bees in a hive designed for them, which is then to be filled out with frames containing empty worker combs. Setting this hive in the place of the parent stock, I remove the latter (which must retain the queen) to a new location, after having inserted frames with worker comb to replace the brood combs abstracted. For several days the parent stock will be losing numbers of its older bees and appear weak and languid, but will speedily be replenished by the daily maturing brood. Besides, as it retains the old queen, eggs are constantly being laid and the population thus renewed and increased. The new colony, in addition to the bees adhering to brood combs given to it, receives for days in succession a constant accession of workers from the parent stock and from the maturing brood. Thus, by the time a young queen is hatched and fertilized, the colony will have a sufficient working force for collecting stores abroad, particularly as for some time there will be no young brood requiring attention. If a royal cell containing an embryo queen nearly mature, can be procured and inserted in such an artificial colony, the term of interregnum may be much abreviated, as a fertile queen will thus be secured several days sooner than by the natural process of queen raising. The young queen may in some instances issue on the following day; and if the weather be propitious she may be fertilized and commence laying within a week after the operation.

I usually provide myself with royal cells by removing the queen from some populous stock eight or ten days before I propose to form artificial colonies, thereby inducing the deprived stock to commence rearing queens. In most instances more royal cells will be built than are wanted for that stock, and I appropriate the surplus for my own purposes. As soon as they are closed, all save one can be removed and inserted in artificial swarms, or nucleus colonies for reserved queens. If cut out carefully with a sharp penknife, leaving attached to them a portion of the comb on which they are built, a hole of similar size and shape may be cut in the comb in which they are to be inserted, and thus securely placed. The bees will usually fasten such cells, if only properly set in the opening, or they may be attached by touching the wax at the junction with a heated knife-blade.

It happens sometimes, however, that the bees of an artificial colony do not content themselves with the royal cell thus inserted, but build some in addition, if they have suitable worker brood. If this is not seasonably discovered, it may furnish the occasion and inducement of natural swarming, which, under the circumstances, would be injurious to the colony. I therefore always use the precaution to examine the combs repeatedly, at intervals of two or three days, destroying any queen cells that may be started.

When I stated that I remove from the hive intended to be divided about one-half of its combs containing brood, for fitting up the artificial colony, it was probably thought that I make too heavy a draft on the former. There need be no uneasiness on that score, in any such case. If in a condition to swarm, the stock can readily bear the deprivation without injury, provided the division be not made at an improper time. But, if unwilling to remove from it so much brood and so many workers, you may, if you prefer, restrict yourself to the abstraction of bees alone, and take the needed brood from some others of your strong colonies. The artificial swarm thus built up will thrive equally well. You may even let the adhering bees remain on the brood combs; being for the most part young bees, they will be kindly received in their new quarters, and if some of the older ones happen to be transferred at the same time and meet with a hostile reception, they will quickly leave for their proper home.

Your artificial swarms will certainly succeed and thrive, if you follow these instructions, and do not undertake to operate prematurely. Wait patiently till your stocks have become sufficiently populous to warrant the expectation that they would ere long swarm; and then be careful to undertake division only when the season is sufficiently advanced and the weather will permit the bees to fly. A single day of auspicious weather will secure the success of your experiment.

In like manner you may divide all the colonies in your apiary, and double your stock annually. But therewith you must resolve to be content, without allowing yourself to be tempted to hazard a larger or more rapid increase; or you may find yourself constrained to re-unite your weak colonies in the fall, or run the risk of seeing most of them perish in the ensuing winter.

There is nothing so disastrous to new beginners in bee-culture as the overweening desire to be the owner of a large number of stocks. If indulged, it invariably and infalliby leads to disappointment and loss. Whereas a rigid adherence to a plan which gives a regular moderate annual increase, is the sure mode of creating and permanently maintaining a large and profitable apiary. Let this counsel be deeply impressed on your memory. It is the most important and valuable that an experienced bee-keeper can give, or a novice receive. Not the number of your stocks should elicit your pride, but their intrinsic excellence. On the latter only can you base your hopes of the enduring prosperity of your apiary, or of remunerating success in your business.

A discarded queen will either be stung to death by the workers, encased and smothered by them in a cluster, or driven out and excluded from the hive.

As soon as the internal temperature of a hive rises to 100° F. the bees cease working, and many of them cluster idly on the outside.

[From the Bienenzeitung.]

White Melilot.

Much has been said about White Melilot (Melilotus alba), as a forage plant affording abundant bee-pasturage. Some regard it as valuable for both purposes, while others think it of no account except in the latter aspect. Both may be right according to the circumstances under which it is cultivated. In some districts, it is said, cattle reject it, whether offered to them in a green or a dry state, while in others, it is stated, they will eat it greedily. I have no doubt both statements are correct, and based on careful observation. The soil in which it is grown makes all the difference.

One of my friends procured seed from me. Some of it was sown on low, moist, sour meadow land; and some on well cultivated sandy soil. Visiting me some time ago, he remarked that the melilot on the meadow land was growing with great luxuriance, but his horses and cows would not eat it; while that from the sandy land was consumed eagerly. He said, moreover, that the meadow had previously produced nothing but sour grass, which the cattle would not eat; and it had, for that reason, been plowed and sown with melilot, in the hope of obtaining from it a more acceptable product, as the hay previously made there could only be used for litter.

Again, in my own immediate neigborhood, there is an extensive range of meadow land; but the plants and flowers found on it naturally yield very little honey. To a point where the deep, moist alluvion enroaches on and covers the drier upland soil, the grasses growing, on the former, though to all appearance precisely the same as those found on the latter, are refused and rejected by horses, cattle, and sheep. If mown and made into hay, it is either sent by the proprietors to the distant city market, or retained and used merely for litter. Such is the influence which some soils exercise on the crops grown on them, and melilot seems to be one of the plants peculiarly liable to be thus affected. If to be used for fodder, it should moreover be cut young. If allowed to attain its full growth, the stems become hard and ligneous; which is the case also with Lucerne grass.

At an agricultural meeting in Magdeburg, Mr. Knauer, well known as an intelligent farmer and bee-keeper, warmly recommended the cultivation of white melilot. When I objected that cattle would not eat it, he replied that it was very productive, that he fed the hay to his sheep, and that it was readily eaten by them.

I have not myself been in a position to cultivate this plant on a large scale, but have a small patch of it near my apiary, which when in bloom is frequented by astonishingly large crowds of bees. Visitors have often expressed their surprise at the sight, and declared they had never seen the like before. A bee keeper who should sow even a quarter of an acre with melilot, would provide three months of most excellent and abundant pasturage for his bees; and the increasing demand for seed among farmers shows that its value and importance in other respects, is coming to be more generally understood.

My friend, B. Banse, has cultivated melilot three or four years. He says it has proved itself very superior for bee pasturege; and cows, goats, and sheep eat it freely. His brother has had equal experience in its cultivation. He states that it furnished ample and acceptable fodder for his cows, and that his bees foraged on the blossoms continuously for more than three months. A square rod yields about six pounds of seed.

In conclusion, I would say let farmers and bee-keepers try melilot on various kinds of land; and then cultivate or reject it, as they may find it adapted or not to soil and climate.

F. BAHR.

[For the American Bee Journal.]

Wintering Bees.

MR. EDITOR:—I hope that all bee-keepers will act on the suggestion made by Mr. Hardesty in the April number of the BEE JOURNAL, and give us their manner and success in wintering bees the past winter. I consider that one of the most important things for successful bee-keeping is to learn how to winter bees properly. In this country (Canada) more bees are lost from bad wintering, than from all other causes combined; and a large number of the colonies that manage to live through the winter, are weak in numbers in the spring and short of honey. They consequently require feeding for a month or six weeks, at the risk of being robbed by more fortunate colonies, or are destroyed by the worms. Such bee-keeping is both vexatious and unprofitable. Hence the question arises, can it not be avoided? I think it can, with a proper place for wintering, and a little care and judgment in fitting colonies for winter confinement. Now if all the bee-keepers who read the BEE JOURNAL, will describe their method of wintering, the number of stocks lost, and *if possible* the cause of their dying, we should then soon be able to learn the best way of wintering our bees. This would be a very important step gained towards success.

I will give the mode of wintering I adopted last fall, and the result. I had twenty-eight colonies, all of them Italians, or at least the most of them, and the rest hybrids. All of them were in J. H. Thomas' movable comb hives. On the eighteenth of November, I put them into a cellar, built like a root cellar. The sides were planked up with seasoned pine planks, and the floor of the same material; the top planked over, and covered with dirt; and ventilated at the end. I removed the honey boxes and tacked a piece of fine wire gauze over the holes in the honey board; and then packed corn cobs on the top of the hives, as many as the covers would set over. With the cellar perfectly dark, and the thermometer ranging from 34° to 38°, they spent the long cold winter of 1867-8, undisturbed.

On the twenty-third of March, I set them out, and found them all (with the exception of two colonies) in a splendid condition. One of the two exceptions referred to was dead, leaving plenty of honey. Cause, *a small colony of bees* when put into winter quarters, with *too much ventilation*, consequently *too cold*. The other hive had a very strong colony of bees, and was very full of honey when put into winter quarters; but came out reduced in bees, and short of honey; combs damp and mouldy. Cause, *not enough ventilation*, consequently *too warm*. The other twenty-six were in good condition, as already stated, with plenty of honey, and some to spare.

Now is there anything to be learned from my last winter's experience? I think there is. *First*, when preparing our stocks for winter, we should ascertain how many we have that are short of bees or honey, and give them a little better protection, and *considerably less ventilation*. *Second*, if we have a very strong and heavy colony (especially if Italian) we would give it *more ventilation*. Perhaps, in the latter case, it would be advisable to take off the honey board altogether, and cover the top of the hive with fine wire cloth, to prevent the bees from coming out.

I, for one, am very anxious to see, in your valuable JOURNAL, the experience of every practical bee-keeper on wintering bees. I think we could then come to some very important conclusions, in regard to wintering our colonies successfully; and on that depends to a great extent our success in bee-keeping, especially here in Canada.

H. M. THOMAS.

BROOKLIN, ONTARIO.

[For the American Bee Journal.]

Wintering Bees.

It has been my practice heretofore to carry all my bees into the cellar about the tenth of December. With the hives I chiefly used, I found the operation quite objectionable—*first*, because of the heavy lugging; and *secondly*, because, to my great dissatisfaction, there would almost always be more or less of the combs mouldy in the spring; and this, too, notwithstanding an apparent sufficiency of upward ventilation. I therefore determined, last fall, to try the experiment of wintering a few on their summer stands. For this purpose I selected five colonies—two of them Italian hybrids, and all in hives that had been constructed with a special view to afford, among other advantages for convenient management, particular facilities for protection in winter. Above the combs I placed corn cobs, for the purpose of absorbing the moisture, and then sticks set slanting against the hives to secure a dead air space, against which I placed straw and litter, and then banked up with chip dirt to nearly the height of the hive—placing a lock of prairie hay over, to shed off the water from rains and melting snows.

Thus protected, I left them undisturbed until about the twentieth of March, when a warm day occurring, I opened them to ascertain with what degree of prosperity or adversity they had passed their long cold winter night.

The first one opened was found in a fair condition. The cobs were quite damp; there were more dead bees than I had expected to find; and there was apparantly a greater consumption of stores than in hives kept in a cellar. Another was found in a similar condition; but a third, owing I think to an accident that occurred to two of the combs a few days before they were put up, and the unfortunate course they had taken, were in a bad condition; the larger part of the bees were dead, and this too with plenty of stores in the hive. I overhauled the combs, and discovering that the queen was still alive, determined to see if with careful nursing, they would recuperate. I set them out on warm days and indoors at night, till on going to the hive one day towards night, for the purpose of carrying them in, I found no bees in the hive, except a few young ones, which were crawling about in a disconsolate mood. There was some brood and plenty of stores, but the swarm had gone, being I suppose dissatisfied with my nursing. Some three or four days after, during which time the nights had been cold and frosty, my son accidentally discovered about sunset a cluster of bees about the size of a large coffee cup, in a little twig of dry leaves lying on the ground under on old shed in the calf pasture. He called my attention to them as a curiosity, and I immediately surmised that they must be my decamping swarm. Taking a nucleus box with stores, I put them in. They seemed joyful enough at first, but on being set in a wood shed they soon were all out, crawling and buzzing as though they did not feel quite satisfied. The next morning, they were quietly clustered among the combs. I set them out and am still watching to see if they will recuperate, though I feel quite sure they will not.

In the February number of the current volume of the Bee Journal, if I mistake not, there is a communication from the Rev. L. L. Langstroth, in relation to a matter that should receive the attention of bee keepers which its importance demands—namely, the loss of bees by expansion and contraction of the cluster among the combs, during changes that occur in the weather. As I mistrust that Mr. L., to whom we are so much indebted for the introduction of movable combs in this country, has a plan of obviating the difficulty, perhaps I should show proper respect by waiting till he promulgates his remedy. But as he has invited discussion on the subject, I venture a few suggestions, not only to the attention of Mr. L., but also to the criticism of all the sharp and knowing ones; promising not to be offended with whatever comments they may honestly make, with a view to remedying the evil.

My plan is simply this: to take out the side combs and leave so few through the middle of the hive that the cluster will always extend beyond them. Have your swarms populous, and your hive so constructed that you can place some well filled combs directly over the cluster; and in the surrounding space place some material that will absorb the moisture from the breath of the bees. Then, with suitable protection on the outside, your bees are safe.

S. L. Richardson.

Webster City, Iowa. April 13, 1868.

[For the American Bee Journal]

Experiments in Wintering Bees.

Mr. Editor:—On the 12th of November, 1867, I weighed twenty-four hives of my bees; nine of which I buried on the same day, in the manner described by Charles Dadant, in the Bee Journal for that month, page 91. On the 29th of November, I put the other fifteen hives into my celler, under my house, where I kept vegetables, &c., for family use.

March 13th, 1868, I removed them all to their summer stands. It being a pleasant day, the bees improved the time in open air exercise. On the morning of the 15th, after cleaning the bottom boards of dead bees and all filth, I again carefully weighed them.

The weight given below is that of the bees, combs, and stores, in each hive, at the time indicated.

When my hives are ready for the reception of the bees they are all weighed, and the weight marked on the hive. This I find very convenient sometimes in my operations with them.

The stocks marked I are Italians; those marked H are half breeds; and those marked B are black bees.

In Cellar.

No. of Hive.	Nov. 11.		Mar. 14.		Loss.	
	lbs.	oz.	lbs.	oz.	lbs.	oz.
H. 1	52	8	37	12	14	12
B. 2	45	4	31	0	14	4
B. 3	43	0	30	8	12	8
B. 4	47	4	36	8	10	12
B. 5	47	4	30	8	16	12
B. 6	43	0	27	8	15	8
B. 7	49	4	37	4	12	0
B. 8	41	12	29	12	12	0
H. 9	34	0	22	0	12	0
I. 10	40	4	33	0	7	4
B. 11	52	4	39	0	13	4
B. 12	33	0	23	8	9	8
H. 13	43	4	37	0	6	4
B. 14	24	0	17	4	6	12
B. 15	43	12	30	0	13	12

Total .... 177.... 4
Average per hive...... 11....13

Buried.

No. of Hive.	Nov. 12.		Mar. 14.		Loss.	
	lbs.	oz.	lbs.	oz.	lbs.	oz.
B. 1	42	12	35	8	7	4
B. 2	47	8	37	12	9	12
B. 3	45	8	34	8	11	0
B. 4	48	12	39	8	9	4
H. 5	42	12	36	4	6	8
B. 6	47	12	38	8	9	4
B. 7	41	8	32	4	9	4
B. 8	30	8	21	4	9	4
B. 9	28	4	22	4	6	0

Total .... 77...... 8
Average per hive...... 8......10

No. 4, in the cellar, and Nos. 1, 2, 3, 4, 5, and 6, of those buried, were box hives. All the rest were movable frame hives of the Quinby form. Caps and honey boxes were removed from the box hives, and the holes left open. Honey boards were removed from the frame hives, and all entrance holes left open.

Fewer bees left the hives of those buried, than of those put in the cellar; and there were fewer dead bees in the hives.

Too much ventilation in winter, I believe, increases the amount of honey consumed, and the number of bees that die. I doubt the utility of a circulation of air through the hive. Either the top or bottom of a hive, I believe, should be closed air-tight, or nearly so.

I should like to see the experience of others, in this direction, published in the JOURNAL.

AVERY BROWN.

DELAVAN, WIS.

[For the American Bee Journal.]

Ventilating Bees.

MR. EDITOR:—I crave a small space in your valuable JOURNAL, in reply to Mr. Adair's article, in the April number, on ventilating bees.

In his article in the February number, 1868, he says:—"If these learned apiarians would go out into the rural districts, and there talk of smothering bees to death, they would be laughed at for their ignorance."

It was to those people that I referred when I said, "the ignorant are wise in their own conceit," and not to Mr. Adair personally. But if he chooses so to apply it, I have not the slightest objection, as when he undertakes to convince practical bee-keepers that bees cannot be smothered, it seems to bespeak a want of due information on the subject himself, or that he relies much on the ignorance of his readers. Possibly he has a different variety of bees. Or, does he claim it as a patent peculiarity of his "Section Hive" that bees can live in it without air?

I thank him for his advice to "think and experiment a little for myself, and not believe all that is taught by others," &c. But does he really think any one acquainted with the physiology of the bee, will have the credulity to believe that they cannot be smothered? There are too many bees lost here, in New England, *by* smothering particularly when wintered out of doors, for his statement of *facts*, which are such conclusive evidence to him.

I might refer to quite a number of mishaps of my own; of having occasionally lost a fine stock by the entrance getting closed accidentally, when there was no upward ventilation; and sometimes by ice closing all the air holes; when I would have the mortification of finding every bee dead, for the want of fresh air and *nothing else*. And how many are there that have kept bees any length of time, who have not had the like "mishaps?" Again, a single glance at a full hive on a hot day in June, shows that a portion of the busy workers cease other labor, to attend to that all important requisite—supplying the hive with fresh air.

Claiming no superiority over any one, I am perfectly willing the subject should rest on its merits with intelligent bee-keepers, as presented in the articles referred to. I am always willing to be taught, and am quite ready to place *my* experience and success by the side of Mr. Adair's; although my experience has been with bees that *could* be smothered, and such as could sting *without first discharging the honey from their sacs*.

Now, Mr. Editor, anything personal in a public journal is decidedly out of place, and generally of little interest to others. But your Kentucky correspondent, after acknowledging that the best and wisest in bee-culture teach directly contrary to the absurd idea he advances, brings my name before your readers, with a slur. Still I will drop the subject, and write of something of more general interest.

Bees have wintered better here, notwithstanding our unusually cold winter, than is usual in this section of the country. The temperature was more uniform than for many years before; and about the 20th of March, we were able to get our stocks out of winter quarters, which is about ten days sooner than the average of years past. The most of my stocks are in the standard Langstroth hive, and in preparing them for winter, I removed the honey board, putting on a frame filled with a double thickness of corn cobs. This I like better than putting the cobs immediately on the top of the movable frames, as it allows free access across the top of the frames, and permits the bees to cluster closer to the cobs. I then returned the super, which has an inch and a quarter hole bored in each end, just below the top, for ventilation.

Of thirty-six stocks in an underground clamp, put in in that way, all came out in good condition, and with more or less brood. I also had two straw clamps above ground. In one of these I placed a few stocks just as they came from their summer stands, without any upward ventilation. These wintered the poorest of any.

The temperature in the underground clamp scarcely varied a degree during the entire winter, being about 34°. I think as much judgment is required in putting bees in winter quarters, as in any other part of their management. To attempt to winter them out of doors, in our cold climate, and expect good success and profit, too often proves a failure.

I would like to hear from others on this subject, through the BEE JOURNAL.

D. C. HUNT.

SHARON, VT.

When the larvæ of the bee has attained its full growth, and the cell is sealed over or capped by the workers, it spins its cocoon, and assumes the pupa or nymph state, preparatory to its final metamorphosis. The worker and drone larvæ spins an entire cocoon, that is, one in which the pupa is completely enveloped. The queen, on the other hand, spins one enveloping only the head and thorax, leaving almost the entire abdomen bare or unprotected. When the insect is mature, it emerges from the cell, leaving its cocoon attached to the base and side-walls of the cells.

[For the American Bee Journal.]

Wintering Bees In Cellars.

J. R. Gardner, Esq., on page 92 of the BEE JOURNAL, vol. 3, in an article on wintering bees, desires that I might give my way of packing bees in my cellar. I do it cheerfully. The cellar in which I wintered the stocks of my home apiary—393 in number—is 18 feet wide, 27 long, and 7 deep. Over it is a small frame house of the same size, for storing hives, boxes, and other articles. Only one room is plastered. The floor is of one-inch boards. In this there are two holes cut for ventilation, each nine by ten inches. The cellar is situated in the side of a hill. The east side of the wall is partly in the ground. An entrance, level with the bottom of the cellar, on this side of the wall, is provided with two doors, the inner one of which has a hole, nine by ten inches, near the bottom, for ventilation.

I usually commence wintering-in my stocks on the 1st of November. They are piled in in a single and two double rows, as close together as practicable, leaving a narrow passage way between the rows, for an occasional visit of inspection. The Langstroth hives I piled up five high, beginning on the floor of the cellar, without anything under them. The box hives I piled four high, all inverted, with their bottom boards on. They had no opening at the top, nor the bottom. The summer entrance, now at top, was the only ventilation they had. Almost all the bees in these hives clustered on the bottom boards, near the entrance. During very cold weather the temperature fell nearly to the freezing point, in some instances. I repeatedly lifted the bottom boards, and found them dry where the bees were clustered, but full of drops of water outside of that space. Towards the end of January, sweetened water ran out of the tops (now bottoms) of these hives; and as this was the first time I wintered my bees in this way, I was afraid there was something wrong. But, on wintering-out, I found all of them, except three, in the best order. One of these three had become somewhat mouldy. The other two had died from starvation, with plenty of honey in the combs. They had clustered on the bottom board away from their stores. All the rest of the stocks were apparantly stronger than when put into the cellar.

The Langstroth hives I pile up without inverting them, and without taking off the honey board. I simply insert quarter-inch blocks under the honey boards at the back end of the hive. The entrance I contract, so that only an opening one inch wide is left. I lost only two stocks; one by dysentery, and the other from some cause unknown to me. The Langstroth hives had less brood when wintered out, than the box hives. I would further state that only a few had become mouldy, and those had no blocks under their honey boards. Three or six one inch holes in the honey boards had not given as effectual ventilation, as the blocks under the honey boards in the other cases.

Out of forty-nine swarms wintered under ground, three died, with plenty of honey. Almost every hive had more or less mould. I do not like this way of wintering bees.

The cellar for my northern apiary, which was constructed in September last, proved to be too damp. Some stocks had become very mouldy, and finally died of dysentery. From this cause I lost twelve hives out of one hundred and sixty-three; and five more from queenlessness, since wintering them out. It seemed singular to me that some stocks had become very mouldy, while others standing right by their side had not a particle of mould, nor hardly any dead bees. On an average the living stocks appear in very good condition. Those of my neighbors around here, who wintered their bees on their summer stands, lost from one-fourth to one-half of their stocks. ADAM GRIMM.

JEFFERSON, WIS., April, 1868.

[For the American Bee Journal.]

Wintering Bees in Minnesota.

The bee-business has suffered much in Minnesota during our cold winters. How shall we winter our bees? is the great question here. A gentleman in St. Paul gave us a long article on wintering bees, by burying them in clamps. This plan proved almost a failure last winter. Two men who have met with some success, thought they had found out the best plan of wintering bees here; which was in cellars in the side of the bluff. Last winter *they* lost 172 stocks out of 300, which had been put in three cellars of this description in the fall. One of my neighbors lost 47 out of 50 stands placed in a granary, the walls of which were filled with saw-dust. The granary was raised a little from the ground. A farmer in the next county placed his hives in the basement of his stone barn, and lost 40 stands, being all he had. Others have shared a similar fate.

I built a bee-house last fall, to winter bees in, with a cellar under the hives, and a chamber over them filled with straw. The walls are packed with saw-dust; and the flues are so arranged that warm air from the cellar, or cold air from the outside, can be let in, and pass off through the straw and roof. In this I placed seventy stands of Italian bees. Thus far, it more than meets my expectations. I made my calculations to keep the temperature as near 30° above *zero* as it could be. Placing the thermometer on a pillar about the centre of the bee-house inside, in December it stood 33° above; and in January 28° above. On the outside it has been as low as 40° below. On the 23d of February, when I went in to give them water, the thermometer stood at 29° above. This month (February) it has been as low as 30° below on the outside. When I gave them the wet sponge, they all answered by coming up promptly to quench their thirst. THOMAS J. SMITH.

RED WING, MINN.

☞In some exceptional cases, a few drones will be retained over winter in populous hives having a fertile queen.

[For the American Bee Journal]

Wintering Bees.

Will any of your many experienced correspondents favor us with an article on burying bees in a trench, for the benefit of myself and other inexperienced bee-keepers — how they ventilate, and with what success? I see by reading your JOURNAL that the cellar seems to be preferred; but all have not got a cellar suitable for keeping a large stock of bees.

Last winter I buried my whole stock in a trench, with ventilation alike in all. Some stocks were strong, others were weak young ones. The strong stocks were placed at one end of the trench, which was protected from the winds, and was consequently the warmest part. The weak stocks were more exposed, but wintered the best. In one of my best stocks I neglected to arrange the ventilation tube. Consequently it was nearly shut out from air, or an accession of fresh air. This spring the bees of that stock were nearly all dead, only about a quart remaining; which were badly off with dysentery. I concluded the cause was want of air. Mr. Adair's article in the April number ot the BEE JOURNAL puts me in doubt. Will Mr. Adair explain?

E. SHULZE.

BROWNSVILLE, IOWA.

Wintering Bees.

A number of years ago, I accidentally discovered that a bee hive under cover, where rain or snow could not fall on it, might stand with the lid or cover off, entirely open, through the coldest weather, and no frost or wet would accumulate in the hive. Having made this accidental discovery, I concluded next winter to put it in practice. I had a narrow shed, just long enough to hold eighteen hives, the ends and one side were already boarded up. I boarded up the other side, leaving a door to go in at; made it it as tight as I could with common rough boards: still there would be some cracks through which the light peeped in. I took the covers off all the hives, they stood there all the winter perfectly dry, not a particle of wet or frost was to be seen about them, but some of the bees would get out at the cracks on bright days, and were lost, because they could not find the way back again. Very early in March they became so restless and so many would get out, that I was compelled to put the covers on, to open the front of the shed and let them go. I thought, then, that if I had something to put over the hive that would keep it dark, and yet let the damp vapor pass off freely into the open air, I should have just the thing that was wanting, but it cost me several years of study and experiment to make that discovery.

W. Y. SINGLETON.

SPRINGFIELD, ILL.

☞Queens may attain the age of five or six years. But usually they die in the third or fourth year.

[For the American Bee Journal]

Want of Air, and Upward Ventilation.

Facts are consistent with truth, and so far as we understand the truth we can explain the facts.

Mr. Adair says bees live without air. But oxigen and carbon sustain animal heat essential to life, and when the animal is hot a much greater amount of oxigen is needed; witness the panting of a dog after a race. The bees which Mr. Adair says had plenty of air, were probably smothered. If bees cannot get out where they see light, they become alarmed, and crowding there prevent the admission of air, while the struggling thousands behind them perish. Bees may worry to death against a window, or the glass side of a cap. It is not a natural position, and puts their instinct at fault. They obey the law of their nature. The bees which Mr. Adair says lived without air, were few in number, a part having made their escape. The hive contained some air; and the light being excluded, the bees were quiet and needed little air. But I must be allowed to doubt their being in air-tight confinement.

The remarks of Bruckish, (Patent Office Report, 1860, page 270), are strange. Only two hives, probably covered with boards, containing a large air chamber outside the hives, buried also in dry earth through which oxigen penetrates freely, seeds germinating six inches deep—thus placed, the bees would have plenty of air. But fine swarms outdoors, with fly-holes only at bottom, are smothered every winter, in the first severe cold snap; for then they must have more air to generate more heat. But the bees below, driven up by cold, pack closely and exclude the little air they have. If Mr. Adair will hold a feather at the fly-hole of a hive before swarming, he will find there is a strong circulation of air.

Mr. Grimm states that in the warm cellar his bees wanted water, and did not get the dysentery. This was because they were warm enough to perspire freely, not using much honey and air to generate heat, they did not generate much water. If the outer air had been below 45°, they would be quiet, if the tops were tight. In a cold cellar, with nine holes in the honey board to let off the moisture, the bees raised brood, and he thinks without water. As bees increase most in wet seasons, and Bruckish says they stop breeding in time of drouth in Texas (Patent Office Report, 1860, page 275), and Dzierzon says they must have water (BEE JOURNAL, 1861, page 148), and the the young bee is mostly water, I will try to explain how they get it. As the heat passes off nearly as fast as generated, the outer or surface bees are cold, (see remarks on temperature, Patent Office Report, 1860, page 90), and form a compact crust. Consuming great quantities of honey and air to generate heat, they are full of water, and could only avoid the dysentery by sweating freely in the centre of the cluster, where they are warm enough; while the temperature beneath the crust is low enough to condense vapor, for dew falls in a warm summer night. (See Langstroth, for opinions of German writers on this subject.) If it were not for the fact that the bees may chill in a temperature one degree above the freezing point, remain so for thirty-six hours and still recover, they could not endure the evil effects of upward ventilation, for their vital temperature is about that of the human body. There is an account of a buried swarm in England, living two and a half months on three ounces of honey. Mr. Adair says they can live without air, the source of water. It seems the way to keep them dry is to keep them warm.

No doubt upward ventilation saves the uncovered comb from mould, as it is colder and the exhalations that escape the bees pass off. But the cold compels the bees to pack closely, confining the moisture among the bees. The inner bees want air, and the outer ones honey and warmth. The inner bees burst through the crust to get air, thereby warming the outer bees and enabling them to come to the centre for honey and protection, before death ensues. These great and frequent agitations shorten the term of life, and destroy the vigor for spring labors. With air-tight tops the bees are warm, cluster loosely, require little honey or air, seldom need to change places, and can do so without much disturbance.

I was an upward ventilation man, but found on examination, it was not only contrary to nature but to all kinds of common sense.

F. H. Miner.

Lemont, Ill.

[For the American Bee Journal.]

Producing Fertile Workers.

I noticed an article in the March number of the Bee Journal, from the pen of Mr. Townley, under the above head. Although he is a very good reasoner, yet I cannot fully agree with him. Wishing to be as brief as possible, I must refer the reader to his article, and not go over his ground. He says:—"It will at once be seen that none of these workers, when in a larva state, could even have tasted royal food;" and further, "I have since had such workers, under similar circumstances, when I was quite certain they never had been fed royal jelly."

Now, how could Mr. Townley be certain that they never tasted royal food, or through what means the royal food is given them? I am quite satisfied they had the necessary food, from the fact that they were developed to fertile workers or queens. Again, there being no queens in his artificial swarms, is not a proof that the larvæ were not fed royal food from royal lips, for it is not the queen's place, nor is it her nature, to feed and nurse a royal rival. It is the duty and function of the worker bees to furnish the royal food; and it is not likely that this food is laid up in store, but is prepared and supplied as wanted.

J. N. Clarke.

Caledonia, Ill.

He who with health would live at ease,
Should cultivate both fruit and bees.

[For the American Bee Journal.]

How I became an Apiculturalist. No. 3.

Looking forward to the swarming season, and believing it impossible to watch my roof-standing hive properly at that interesting period, I conceived the idea of resorting to artificial swarming. Feburier, in his treatise on bees, gives all the necessary information, and following that author closely, I manufactured two leaf or Huber hives, with some important improvements. The hives were constructed of eight frames fastened together by two iron rods, and covered with an outer box. Into one of these hives I was to transfer my colony, and the other was to receive the expected swarm.

In April following, after many delays as I was reluctant to disturb my bees, on a bright morning I ascended the roof with all the apparatus supposed to be necessary for so big an operation. After blowing some smoke in at the entrance, according to the instructions of the book, I inverted the hive. But like all beginners, I acted with too much precipitation; for before the empty box could be properly adjusted over the inverted hive, a multitude of bees rushed out in anger, assailing and stinging me on all sides. Never before had I been in a similar situation. Like a recruit in his first battle, I was ready to flee from the spot. But, reflecting that my comrades, who were always ready to quiz me about my hobby, would never cease teasing me if I now shrank from the undertaking, and unwilling to become their laughing-stock, I persevered firmly, though multitudinous stings were piercing me through my clothes. The result was a complete success. Everything turned out as the book had predicted. The bees were driven out by my rapping, and I could cut the combs and fix them in the frames, with no further difficulty. The bees being soon gorged with honey, became peaceable as flies, and I ventured to dispense with my gloves and throw off my wire mask.

Eight days thereafter I disturbed my bees once more, to remove the fastenings from the combs. All was right, and I was quite elated with my success, so that I disregarded and scarcely felt the numerous stings with which the bees complimented my visit; for deeming the smoke needless and inefficacious, I had opened the hive without preliminary precaution. This disrespectful treatment so irritated my bees and fixed their ill temper that for weeks after I could not show my head on the roof, without being at once rancorously assailed.

Three weeks subsequently, observing some bees clustering out, I resolved to divide the colony. I was the more ready to undertake this, as I was to be absent some fifteen or twenty days on a canvassing jaunt. By reperusing Feburier and some other apicultural works, I had acquired a better knowledge of bee management, and went to work with more calmness and deliberation. Using smoke I opened the hive, loosened the frames, and searched the combs for young brood, without irritating the bees. Good weather previously having favored the blossoming of the rape, forage was abundant, and the cells were so filled with uncapped honey, that suitable brood was scarce, only one comb showing eggs and larvæ. Rapping smartly on the opposite side of that comb, (for Feburier claimed that those raps would attract the queen), I put one half of the combs, with the bees attached, in my new hive, and fitted the two hives with empty frames. Then placing them one foot on each side of the old stand, I watched to see the bees divide equally between them. The next day all seemed right, to my inexperienced eyes, and I started on my journey with entire confidence that the work had been well done.

On my return I found my new hive covered with clustering bees; but as for the old stock hardly a bee could be seen entering or issuing. I raised the outer box and opened the hive. It contained neither bees, nor brood, nor honey; but a large number of moth worm in various stages of growth. I had evidently put the queen with the brood, leaving the old stock without the means of raising another. I resolved to repeat the operation more carefully, and undertook the tedious task ot picking out all the worms, and destroying them.

The ensuing two days were rainy. On the third, as I was making preparations to re-divide, I was informed that my bees were decamping. Indeed crowds of them were already hovering in the yard, and I soon saw many enter, by an open window, a second-story room in a neighboring house. A woman and two boys, occupants of the room, were quickly busy, with cloths and broom, endeavoring to expel the intruders. I hastened to the scene, and on my arrival, saw a small cluster hanging in the embrasure of the window, and the disturbed bees dispersed through the room, while the woman and the boys were severely stung in their efforts to dislodge the unwelcome visitors. With much ado, I succeeded in persuading the woman to leave the bees in peaceable possession of the chamber a short time, till I could make arrangements for their removal—promising that she should be rid of the annoyance before noon. I then proceeded to extract the stings from the three victims. Here let me remark, by way of parenthesis, that usually the stinging bee leaves in the flesh the sting with the vesicle or sac containing the poison attached. If the sting is not extracted immediately, the vesicle being contracted, continues to pour its contents into the wound. If pulled away with the fingers, the vesicle is pressed, and the same effect takes place, only more quickly. The best way to prevent this, is to *remove the sting by sliding a knife blade on the skin;* the venom bag is thus closed, and if the operation is promptly performed, no swelling will result. As no specific remedy for the sting of the honey bee has yet been discovered, the less the wound is touched or rubbed after removing the sting, the less will be the swelling.

While the bees were gathering in a cluster, I surrounded the mouth of a bag with wire to keep it distended, raised it under the cluster, dislodged the bees by sliding a quill between them and the ceiling, closed the bag, and carried the swarm to my hive. On repeating this operation, very few bees remained in the room. Then selecting from my old hive a good comb full of honey, I took it to the boys, to mollify their stings and temper. Still, this donation was not sufficient to assuage the anger of the father on his return; for next day I received a visit from two policemen, who announced that as my bees were accused of disturbing the public peace, they were condemned to leave the city immediately.* I however succeeded in obtaining a week's delay, and as some days after, I found a few just hatched queens thrown out on the zinc roof, showing that no swarm was to be expected that season, I determined to let them remain where they were till the ensuing spring.

CHARLES DADANT.

HAMILTON, ILL.

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* ☞We take pleasure in announcing that, if the anti-apiarian portion of the good people of Wenham lack a legal precedent for municipal bee-banishment, it seems likely, from the incident related above, that they could find it in the records of the police court of the ancient city of Langres, in France. Won't they send a delegation for it?

A New Kind of Bee-Bob.

To keep natural swarms from decamping when they issue, and induce them to settle in a manner convenient for hiving, I take two or three frames filled with comb, adjust them together at the distance apart at which they are usually set in the hive, and fasten them to a light pole ot convenient length. When the swarm issues, I present this to the bees ten or twelve feet in front of their hive, and they usually betake themselves to it without hesitation or delay. If the swarm has already settled on a tree, it can commonly be induced to take possession of the combs, by placing the apparatus gently over or against the cluster. Even if settled in a hedge, otherwise difficult of access, they will readily remove to more acceptable quarters, if the frames be presented to them through an opening in the hedge, made by drawing the branches asunder. When the bees have fully taken possession of the comb, they are not apt to leave; and the frames may be again separated, and set in a hive in the usual manner, with the bees adhering to the combs.

J. RODELSPERGER.

When capping worker or drone cells the bees sometimes use newly secreted wax, but more generally take the needed supply from the thickened edges of the cells themselves. Queen cells receive a kind of duplicate capping, being first closed in the ordinary manner with a thin film or scale of wax, over which a thicker outer covering is afterwards placed, with a narrow dead-air space between.

Each of the numerous species of bees has some difference in its habits, its mode of collecting honey, constructing its dwelling, or providing for its young, and other particulars.

[For the American Bee Journal.]

Experience in Italianizing. No. 3.

By Another Novice.

In my last I promised to give my experience in raising queens, but an attack of sore eyes compelled me to be too late for the May number.

In the early part of last spring, finding my bees had wintered well, I commenced feeding two Italian stocks, in order to stimulate early breeding, that I might have drones early. But in this I failed, for the black drones appeared the same day as the Italians. My object was to raise early queens; and in order to do that, I endeavored to ascertain the easiest mode for a beginner. I found so many modes proposed in the books and the Journal, that I was greatly puzzled how and when to begin.

On the 15th of April I transferred a weak colony to a frame hive, and as I went to remove the splints on the fourth day, I discovered that three or four queen cells had been started I was surprised that I had lost the queen in the operation, for I had hardly lost a dozen bees besides. Experience has since taught me that the black queens will hide in any place they can find. When transferring a colony ten days ago, I found the queen hid in a crack in the old bottom board, after all the bees had gone in and the hive was set on its stand. It was by mere accident that I chanced to see her, as I supposed she was in with the bees.

But to return to the cells. I noticed them almost every day, and on the twelfth saw where the first had come out and destroyed the others. Thus I had raised my first queen accidentally The spring being very damp, cold and backward, and there being no hope that drones would appear soon, I destroyed her in about a week or ten days, and gave them a frame of brood and eggs from one of the Italian colonies, hoping the bees would build queen cells; but they failed to do so. In about a week I gave them another frame of brood, and they then started a few cells; but by the time they were ready to be cut out, the last week in May had come and the earliest drones made their appearance.

I now swarmed the two stocks of Italians, each of which had from ten to fifteen cells, a few being sealed over. This was on the 28th of May. Two of the strongest black stocks swarmed on the same day. The rest being in box hives, which I had not yet learned by experience how to swarm, I concluded I would let them alone and see whether they would not swarm naturally, which they did. I now felt at a loss what to do with the great number of queen cells that had appeared all at the same time, say about forty in three hives. I removed the black queens from the new swarms, and put a cell on the top of each between the frames, all of which did well. I formed a few nuclei in small boxes and gave them cells, all of which hatched; but only one queen remained to become fertile—the bees of all the others leaving with the queens on their excursions to meet drones. On opening one of these nuclei about noon, I observed where the queen had just emerged from her cell, and destroyed the next cell that joined it too closely to be separated. About two inches from it was another cell with a queen just working out. The third queen had just left, accompanied by all the bees in the nucleus. How are we to account for her not destroying the other cell on the same comb, within two inches of her own? Was she unaware of its existence, or did the bees defend it, intending to swarm when there was not a particle of brood in the box? I removed this cell and inserted it in a hole in the top of a box hive that had swarmed a few days previous, and poured in a little honey around the sides, to prevent the bees from killing the queen, knowing that she would get out of her cell in a few minutes. I did this merely as an experiment, not knowing any other way to save her, as there were not bees enough left in the nucleus to nurse her. Three days after, about one o'clock in the afternoon, I observed a beautiful Italian queen enter the hive. Thus my experiment had proved successful. I put cells in the holes of all the box hives in from two to four days after the first swarms issued, and the next evening after the second left—all except one of which hatched; and some of them met Italian drones. Thus I had succeeded in Italianizing my box hives in a way little expected. I had calculated on having to drum out the bees, hunt up the queens, and introduce some reared in nuclei, and keep them caged for twenty-four hours. The use I made of the numerous queen cells that came just at the right time saved me a great deal of trouble. But had I taken bees enough from the two natural swarms that came off the same day on which I divided the two Italians, and formed a few more nuclei, giving each a queen cell and a piece of brood comb, I might have saved more of the cells and all the young queens. As it was, I saved only about ten of them.

I dislike the practice of cutting out brood or eggs from large hives, to rear queens in small nuclei. I prefer having the queen I intend to rear from a nucleus hive about twice or thrice as large as the common nuclei, with frames of the ordinary size, so as to be able to give each nucleus a frame of brood. This has the additional advantage of preventing the bees from leaving with the queen on her exit to meet with drones. I consider this method much less trouble. I tried it from July until September, with a young fertile queen, and reared in all that season thirty-five queens. Four of these were unable to fly, and eight of them were lost on their excursions.

In the fall I removed all the hybrid queens, and attempted to introduce pure queens that had mated with Italian drones. In this attempt, however, I had my first trouble, as the bees killed several of them. I was compelled to give them back their own queens, which I had saved in cages, to be prepared for the emergency. Having no more queens to give them, I tried this on the twenty-four hours system. But this too is not always safe in the fall; though I am willing to risk it at all times in the spring.

I said four of the queens could not fly, from defective wings. But there were three others, very beautiful and bright ones, on which I could not discover the least defect, that refused to lay at all, after having been kept for two months—one of them having been changed to two other populous hives, to induce her to lay. I concluded they could not fly, and had not been out to meet the drones. But why then did they not lay drone eggs? I killed two of them; and as I was about to destroy the last one, I took her in the house, to show her to some ladies. In a few minutes she flew from the lap of a lady to the door, rested on the top for a moment, then flew back to the apiary, made a circuit there, and went off to parts unknown. Now I had tossed each of them up in the air repeatedly, to see if they could fly. Can any one explain why they would not lay. A.

LOWELL, KY.

[For the American Bee Journal.]

More Questions.

MR. EDITOR:—Looking over the columns of your valuable BEE JOURNAL, I find questions asked and answered—I request the privilege of making a few inquiries. Perhaps some of your readers can give me the desired information.

First.—Can the small hives used for rearing queens, holding three or four frames four or five inches square, be placed anywhere during the winter, so that the bees therein will survive till spring?

Second.—Which one of the following movable comb bee-hives combines the most advantages—the Langstroth hive, the American hive, or the Quinby improvement of the Langstroth hive?

Third.—Which is best for bees, a winter moderately cold, remaining unbroken from fall till spring; or one which affords frequent intervals of warm weather? A. J. FISHER.

EAST LIVERPOOL, OHIO.

Bees Fertilizing Blossoms.

How continually do we observe the bees diligently employed in collecting the red and yellow powder by which the stamens of flowers are covered, loading it on their hind legs, and carrying it to their hive for the purpose of feeding their young! In thus providing for their own progeny, these insects assist materially the process of fructification. Few persons need be reminded that the stamens in certain plants grow on different blossoms from the pistils; and unless the summit of the pistil be touched with the fertilizing dust, the fruit does not swell, nor the seed arrive at maturity. It is by the help of bees, chiefly, that the developement of the fruit of many such species is secured, the powder which they have collected from the stamens being unconsciously left by them in visiting the pistils.—SIR CHARLES LYELL.

Mr. Kark, of Stettin, advises that a hive which contained a foulbroody colony, be thoroughly washed with a clear solution of chloride of lime; and then well dried, set open in an airy place, and kept unoccupied by a swarm for at least one year.

[For the American Bee Journal.]

Remarks on a Reply.

In friend Thomas' reply to "Those Seeming Puzzles," he appears to think there might in that case have been two swarms. There was not, however. The hollow or cavity was about eighteen inches high, and wide enough for six combs, five worker and one drone comb. The entrance was a two-inch hole at the top of the cavity, on the south-east side of the tree.

There were other peculiarities about said swarm, that I am going to tell you of. Both the old and the young queen were extraordinary large ones. The upper part of the head of the young queen, where the eyes are situated, was shaped like a drone's. She also had large spreading and perfect drone wings. The workers from this queen were the largest I ever saw, with one exception. Three years ago, last fall, I saw at Dacotah, in this State, in the apiary of Mr. Reed, a swarm of as large bees as those were. If it had not been for Italianizing my apiary, I should have kept that queen to breed from.

Mr. Thomas may be mistaken about the workers guarding the old queen. Last summer my best queen was superseded. I was taking out brood and eggs every few days to raise queens from, and they were storing surplus honey in boxes. But all at once the boxes were deserted. I immediately examined the hive to see if they were preparing to swarm, and found eight perfect queen cells. The old queen was there attending to her regular business. I cut out all the queen cells; but they immediately started new ones; and as fast as they were sealed, I took them out. But I discovered that the old queen stopped laying, and also observed that there were no guards to keep the queen from the cells. Some days I would take out the frame she was on, four or five times a day, without disturbing the bees or using any smoke. There were five cells on the comb that she was on. I frequently saw her pass close by a cell, but she paid no attention to it. And once I saw her deposit an egg in a cell, pass directly over a queen cell, and deposit an egg in a cell on the other side, without paying any attention to the queen cell. About the first of September, I allowed one young queen to mature, and there were no guards over either of the queens until the young queen was fertilized. Then the old queen was enclosed in a cluster or knot of bees, and the next day she was dragged out of the hive, dead.

I acknowledge the receipt of Mr. Thomas' book—a very good and comprehensive work for new beginners.

I have also received, within a short time, no less than six different patent hive circulars, all claiming to be the very best in use.

E. GALLUP.

OSAGE, IOWA.

Bees see best in broad daylight; less distinctly at dusk; and, according to some observers, not at all in the dark—the antennæ, as is supposed, then supplying the place of eyes.

[For the American Bee Journal.]

A few Probabilities.

Different Kinds of Hives.

1. Straw, twisted and formed in the shape of a high inverted bowl.

2. A square box, made of six boards, forming the sides, the top, and the bottom.

3. A square box, twelve inches inside measurement, fourteen inches high, with two or four boxes placed on the top, covered with a cap. The boxes of the aggregate capacity of twenty pounds.

4. A box, so constructed as to present a larger surface for the surplus honey boxes to rest on, and two tiers of boxes, one above the other. Aggregate capacity, fifty pounds.

5. A box, so constructed with side chambers, as to receive boxes on two sides, the whole height of the hive. Aggregate capacity, seventy pounds.

6. A box, so constructed with side chambers, and a chamber in the top of the hive, as to admit surplus honey boxes on both sides and top of the hive. Aggregate capacity, one hundred and twenty-five pounds.

The first class of hives may include sections of a hollow log standing upon a board for its bottom, with another nailed on its top; or a flour or salt barrel, standing on its end.

Results. 1. The hives with but little room will give many swarms, and little surplus honey.

2. The hives with abundant room, whether in hollow log, barrel, or surplus honey boxes, will give a large amount of surplus, and large swarms, when they do swarm—which will not be often.

Classes of Hives.

No. 1. The small hives of this class, and of class No. 2, will give many swarms, no surplus honey, and consume the stores gathered for winter. Honey for use, must be secured by driving out, or by destroying the bees.

No. 2. Will give from nothing to forty pounds. Mr. Quinby, in one edition of his work, estimates the average at one dollar's worth. This, at twenty cents per pound, is five pounds. In a revised edition, he estimates it at two dollars' worth, ten pounds. I purchased three colonies in this class of hives in 1824, I think. They gave me one swarm each, and not one ounce of surplus honey; though the four boxes were placed on each hive.

Class No. 4, will occasionally fill their boxes; and in an extra season, may exceed.

So of Nos. 5, and 6. They will occasionally fill their boxes, and sometimes exceed it. Colton's patent is of Class No. 5. The Farmers' hive, patented in 1862, with boxes of from sixty to seventy pounds capacity in the aggregate; and the Eureka hive, patented in 1867, with boxes of one hundred and twenty five pounds capacity, may both be counted in Class No. 6.

In 1864, thirteen colonies in the Farmers' hive gave seven hundred and ninety-seven pounds of surplus honey—an average of sixty-one pounds. In 1867, my whole number in that hive, including one reported by Mr. House, gave an average of sixty eight and a half pounds of surplus—being six hundred and seventy-eight pounds from nine hives.

Four Eureka hives, all in which were swarms in the spring of 1867, gave five hundred pounds of surplus—averaging one hundred and twenty-five pounds each.

Conclusions.

1. Bees place their brood in the central part of the hive, for warmth and protection from enemies.

2. Store their honey in the upper part, and and side edges, and outside sheets of their combs.

3. The best arrangement of surplus boxes is on the top and by the sides of the sheets of comb.

4. The surplus honey boxes should be placed in as close proximity to the sheets of comb as may be. The less obstruction the better.

5. If ample room is given for brood in the sheets of comb which form the centre of the hive, there is little danger of brood in the surplus honey boxes. Out of more than two hundred surplus boxes, filled with honey by my bees last season, there was brood in only four; and that was from other causes than from close proximity of the swarm.

6. Bees may be expected to store surplus honey in proportion to the amount of room given them in surplus honey boxes.

7. They will as soon probably commence in a second suit of eighteen boxes, as in a suit of two boxes. The colony that gave one hundred and seventy-four pounds of surplus last season, gave one hundred and twenty-one pounds of white clover honey in the first suit of boxes, and on the removal of those and the supply of twelve empty boxes, they entered them at once, and stored in them fifty-three pounds of buckwheat honey.

8. The boxes should be so arranged as to bring the whole suit equally near to the brood—forming an equal amount of comb on both sides of and above the brood.

I draw the above conclusions from the observations I have had and the experiments I have made. Jasper Hazen.

Albany, N. Y.

Besides the honey sac, in which the bees collect nectar, water, &c., and convey them to their hives, the abdomen of the bee contains another viscus, the chyle-stomach, or true stomach of the insect, in which the nectar and pollen required for its own nourishment or that of the larvæ, and for the production of wax, are digested. Food partially digested here, is disgorged from this stomach for use of the larvæ; that more completely digested goes to the support of the individual bee; and the excess is converted into a fatty substance, or wax, and is secreted in the wax packets on the under surface of the ventral segments of the abdomen.

☞A young swarm builds worker combs exclusively at first. Weak swarms and second swarms seldom build drone combs the first year.

[For the American Bee Journal.]

Closed or Open Top Frames.

I noticed an article in the February JOURNAL on side opening hives, by Mr. J. H. Smith, wherein he seems to think the various articles in the December number on such hives, fixed frames, &c., all refer directly to the American hive, with its fixed frames and other objectionable features, which are useless if the frames are of the right construction—namely, having their tops separated throughout their length, as well as their ends and bottoms. Now I have not the least objection to a man using what hive he pleases, nor is it any of my business. Still I believe it to be the interest of every man, when he purchases a patent bee hive, to procure the best of the kind in the market. The simpler it is in construction the better, provided the desired object is attained.

As to movable comb frames for bee hives, I think any unprejudiced practical apiarian, who has used the different kinds of frames, closed or open top, will admit that the frames invented by Mr. Langstroth are, for practical operations, far superior to the frames above referred to. For a man who does not work the frames at all, doubtless fixed frames are as good as any. But for such a man, why have any frames in the hive? The old box hive is, for such management, decidedly the best, as it affords the least protection to the moths and worms.

Improved hives, without improved management, have done more harm than good. Most bee-keepers, when they purchase a patent hive, seem to think their bees are bound to prosper in spite of mismanagement and neglect. Should their bees die, as is not unfrequently the case under the old system of management—which is just no management at all—they will attribute it, for want of a better reason, to the patent hive.

For a man who has but a few hives to superintend, and has plenty of spare time, which unfortunately is not the case with most bee-keepers, such hives might do. But the case is very different where a man has a large apiary to superintend, and but little time to devote to his bees. I can superintend forty colonies in the Langstroth hive in the same time that it would take me to perform a like operation in a dozen hives containing closed top frames, and not kill one-fourth as many bees.

Mr. Smith says there are but few cases in which there is a necessity for looking at a particular comb. He must be poorly informed in regard to the first principles of practical bee-culture, to make such an unguarded assertion. The accidental breaking of a comb, he says, might be one. Now, in that case, it would be much easier and quicker, to slide one frame a little to the right and another as much to the left, and lift out one comb at the side, whereby you have ample room to remove the broken comb, than it is to commence at one side of the hive and take out every comb till you come to the one you wish to remove. Again, when you replace the combs, you have to be as careful to set every comb in its old position, as you would the machinery of a clock, especially if it is an old stock. If you do not follow this rule, you have to use the knife in replacing nearly every comb.

Then, again, in the spring or fall, when you wish to air late or weak swarms by inserting combs well stored with honey and bee-bread, it is often impossible to introduce the comb without resorting to the knife, and thus causing the honey to run from the uncapped cells—the odor of which attracts bees from other hives, perhaps to the ruin of the colony you wish to aid.

Suppose, further, you wish to remove a queen from a hive. You have to commence at one side of the hive of course, and perhaps remove nearly every comb in it, before you find her. Consider also the time and trouble required to close up the hive again, after you have found and removed her. You have to use the knife in replacing nearly every comb, to say nothing about the time spent in hunting her. When looking for a queen I have found it to be the better plan to commence in the centre of the hive, as she is almost invariably found on one of the brood combs. In such operations the Langstroth hive speaks for itself.

Sometimes you desire to strengthen a weak colony in the spring, by inserting combs well filled with maturing brood. In such cases the disadvantage of side opening hives and fixed frames is obvious enough. You will only find the brood combs in the centre of the hive at this time of the year, and, more than all this, it is all important that the brood comb you are introducing should be placed in the centre of the hive you wish to strengthen. Thus you have necessarily to encounter the difficulty twice, before the operation is completed.

Again supposing you are raising queens to supply your artificial colony or the parent stock with a fertile queen. In every operation connected with this, the disadvantage of closed frames will be plainly enough exhibited; and the Langstroth frames will be found permanently superior. I have used Langstroth frames fourteen inches high, with little more trouble than those in the shallow form of hive as now used by Mr. Langstroth. To steady the frames put a stick across the bottom of the hive, transversely to the direction of the frames, leaving a space of a quarter of an inch between the top of the stick and the bottom of the frames. Take some small wire, cut it in pieces two inches long, bend these in the shape of the letter V, form a small ring on each end, and fasten with small tacks, so that the sharp end extends up between the bottom of the frames. This will hold the frames steady, tip the hive as you will.

I would say, in this connection, that I believe I can obtain more surplus honey from the shallow form of the Langstroth hive than from any other I have tried. HENRY S. SEE.

EVANSBURG, PA.

☞It is an error to say that queens and drones will not feed themselves. I have often seen queens eating honey out of open cells; and have noticed drones doing so hundreds of times.—BERLEPSCH.

[For the American Bee Journal.]

Upward Ventilation.

Without presuming to advance any ideas that are new, I wish to say a few words respecting moisture in hives.

Every observant apiarist knows that vapor is constantly generated and thrown off by the cluster of bees. This vapor comes in contact with cooler air, and is condensed; and in severe cold weather it accumulates in the hive in the form of frost, often within an inch or two of the cluster. If the cold weather is very long continued, and the bees consume what little honey there is in the combs covered by the cluster, the colony starves with plenty of honey in the hive. If the cold weather is of short duration, and a day following sufficiently warm with the heat from the bees, to melt the frost, the water runs down the sides of the hive to the bottom board. There it again freezes, sometimes closing the entrance of the hive with ice, and causing the death of the bees by suffocation.

If we house them during the winter, unless we ventilate upwards, we still have the moisture, and often have mouldy combs. But when housed, even in a room where it does occasionally freeze, if we give them abundant upward ventilation, we get rid of the whole difficulty, without any perceptible injury to the colony. At least this has been my experience for the last eight years.

I introduced an Italian queen to a colony of native bees, in October, 1866. On the first of December there were no Italian bees or brood to be found in the hive. They were housed, with the honey board removed, in a room where it often freezes in winter. About the twentieth of February, they were set out for an airing. The colony was quite as strong as when they were housed, and at least one-fourth of the bees were Italians. On examination, the combs showed brood throughout a large part of the cluster, proving conclusively, in this instance at least, that, with all the upward ventilation that could be given them, there was sufficient moisture and heat retained in the hive for breeding purposes.

I have wintered bees in the room referred to, both with and without ventilation, and much prefer the former method.

We are referred to the home of the bee in the woods, to show that such ventilation is not necessary. But, what is that home? My first bee tree was found in 1842. Since that time I have found and helped to find and cut nearly a hundred more. Many of them were much better homes for bees than any I have ever seen constructed by man. If our hives were made of some material that would absorb all the moisture generated in them, upward ventilation would be unnecessary. And this is precisely the condition of many of these natural homes. The hollow is formed by the decay of the timber, and is lined with wood more or less decayed; and this dry rotten wood is one of the best moisture absorbing materials that could be used.

In the study of bees, in contemplating the results of their labors, we learn to look beyond them to the Great Creative Power. Even nature's home for them shows us the wisdom of the Creator, who, in providing them with a habitation, has supplied them with one so well adapted to *their* requirements. And it should teach the apiculturist—whether he winter his bees in doors or out—to adopt some means to keep the interior of his hives dry.

J. H. Townley.

Tompkins, Mich.

[For the American Bee Journal.]

Patent Hives and Claims.

Mr. Editor:—I am already convinced, from my short experience in bee-culture, that, to make this pursuit profitable, we need the best bee hive that can be invented for the use of the apiculturist and habitation of the bee. We are greeted on every hand by the claims of patent venders, and of course they are not all *best* for *successful* operation with bees. For the new beginner, who has no experience of his own, I find it is not only a great waste of time but a great waste of money, to be compelled to purchase every patent that may be presented, if we would learn which is best. I therefore think that you would greatly enhance the public interest in bee-culture, by calling on every owner of *patent* claims to present a copy of them for publication in the Bee Journal, with explanations, and *cuts illustrative* of the hives, and of the *different portions* of the same that may need illustration, to render them more easily understood. We could then, from such explanations and illustrations, judge better of the value of the claims and the worth of the hive; and more easily decide what is adapted to our wants. We might thus too be enabled to avoid an unnecessary expenditure of money, while promoting our best interests in scientific and practical bee-culture.

Of course no patentee could object to this, if he thinks his patent worthy of public confidence and patronage; for their public exhibition, in comparison with the claims of others, would bring their good qualities into more general notice and adoption. These illustrations would also be gratifying to the readers of the Journal, since all like to have before them a picture of what they are reading about. And to bee-keepers it is especially important to have placed before them every patent claim, so that each can ascertain whether he is trespassing on the rights of others, by inadvertantly using that to which some patentee has a legal claim. All those claims also that need explanation, should be so plainly presented that the construction and use of the different fixtures may be readily understood, and every patentee should be willing and ready to do this in the pages of a Journal designed to promote bee-culture and devoted to the interest of bee-keepers.

J. Davis.

Charleston, Ill.

The smell of balm is very agreeable to bees, and it is well to have this fragrant plant growing in the neighborhood of the apiary.

[For the American Bee Journal.]

Langstroth Hives, &c.

Mr. Editor:—In the February number of the Bee Journal, 1868, page 157, Mr. E. Gallup says:—"why Mr. Langstroth does not furnish his agents with some other form of hive besides the broad shallow things that I have seen, is more than I can understand." Now I presume that Mr. Langstroth knows his own business, and furnishes that form of hive which is mostly ordered by his customers. I found it so, at least, and received just such a hive as I ordered. And, furthermore, I have no reason to find fault with the above mentioned form of hive—from a single one of which I have taken more than thirty-two dollars ($32) worth of honey last season. Nor have I ever had a stock starved or frozen to death in them, though I have used them now three years. My bees are the common black bees. I have no Italians, nor have I ever seen any; but do not think I shall have this to say at this time next year.

I presume if Mr. Gallup prefers a shorter and deeper Langstroth hive, he can be accommodated by Mr. Langstroth, or his agent; as the Langstroth hive is not by any means confined to the broad shallow form.

Again, my opinion is that bees do not fancy climbing up two or three flight of stairs, after they have reached their hives with a heavy load. At least, I am willing to unload when I get up one flight of stairs, if there is any chance to do so. I have seen a style of hives that were staked and ridered with fence rails to keep the wind from blowing them over; but I have no fancy for such contrivances to keep *bees* in.

When I read Mr. Quinby's able work on bees, I did not understand it as Mr. Gallup seems to do. Where Mr. Quinby speaks of his two-story bee house, he says it would be ornamental, and a few pages back—I think on page 107—he objects to bee houses, for several reasons, and says they will not pay. I know that young and even old bee-keepers of the present time, can get much valuable information from Mr. Quinby's book.

To Mr. Langstroth belongs the credit of introducing to us the movable comb system; for if each and every feature of the Langstroth invention is taken from other movable comb hives, there is, in my estimation, precious little left to buy a right to use. In view of all the light he has given us on the movable comb system, I can see no improvements made by any one else.

Again, it is the same with bee books. Almost any tolerably good scholar could take Mr. Langstroth and Mr. Quinby's books and write another *from* them; and he would be thought quite an author by a person who saw his production, and had never seen the former. But let him see the originals, and he could pretty well guess where the other came from. Hence I think Mr. Langstroth is the man who deserves the pay and honor.

Now a practical suggestion. To contract the entrance of a Langstroth hive, to prevent other bees from robbing a weak colony, reverse the movable blocks, with the wide ends next each other, place them close to the hive and half an inch or so apart; lay on the top of the blocks a piece of board or shingle, thus forming a narrow hall or passage, where it would be almost impossible for a strange bee to enter a hive without being detected.

Let me add my closing advice to beginners in bee-culture: Procure Mr. Langstroth's book on the Hive and the Honey Bee, Mr. Quinby's Mysteries of Bee-Keeping, and take the American Bee Journal, and if there is any *enterprize* and *energy* in you, you can have honey and make money. M. Wilson.

Denison, Ill.

[For the American Bee Journal.]

Height of Hives.

In the January number of the Bee Journal, Querist expressed a wish that the readers of the Journal would give their views as the best *size* and *form* of hives. Mr. Quinby says the advantages of bee-keeping depend as much upon the construction of the hives, as on any one thing. And in the February number, Mr. Langstroth suggests that some of his hives be made higher and more compact, for the purpose of testing their adaptability for wintering bees, on their summer stands, in the open air.

Now, although this is a move in the right direction, I think that fifteen inches, the height Mr. Langstroth named for the proposed change in the form of his hive, is running to an extreme. I have used hives just fifteen inches in height, but the amount of surplus honey obtained from hives of so great height would not satisfy bee-keepers of the present day. Of course hives so low and widespread as to secure the greatest amount possible of surplus honey, are not profitable, if the hives are to remain on their stands during the winter; as it would be next to impossible to get anything like a full swarm through the winter, with the breath of life in them.

I think that, to avoid extremes in the height of hives, we should not vary much from twelve inches. I have a letter from E. Kirby, of Henrietta, N. Y., who had experimented a great deal in the height of hives. He decided that twelve inches was best. The usual height of the Langstroth hive is ten inches. Two inches in the height of a hive makes a material difference. Movable frame hives are not quite as warm as those without frames; as the vacant space around the frames admits a comparatively free escape of animal heat, and is so much additional space for the animal heat of the swarm to extend over, and thus renders the swarm less able to maintain the requisite degree of warmth. Isaac Ide.

Medina, N. Y.

Crippled and disabled workers are not tolerated in the bee commonwealth. They are at once condemned and ejected by the community, as not only useless but injurious members, for whom no compassion is felt and no mercy is in store. Crippled queens are reserved and cherished, though when become superannuated and unproductive, they too are discarded.

THE AMERICAN BEE JOURNAL.

WASHINGTON, JUNE, 1868.

☞ THE AMERICAN BEE JOURNAL is now published monthly, in the City of Washington, (D. C.,) at $2 per annum. All communications should be addressed to the Editor, at that place.

☞ Several valuable communications were received too late for this number of the JOURNAL, and some articles now in type are unavoidably omitted.

☞ The queen bee received last month by express, from Mr. Grimm, died on the second day after her arrival, before any steps could be taken to ascertain why her eggs would not hatch, as she laid none during her journey, nor subsequently. An examination of her spermatheca left it doubtful whether she had been fertilized.

No similar case appears to have come under the observation of any German apiarian. The Baron of Berlepsch, in his very comprehensive treatise on Bees and Bee-culture, published in 1860, says expressly that every egg laid by a queen will hatch; and so far as we can recollect there is nothing in the *Bienenzeitung* since indicating a different opinion or intimating a doubt. Yet we have heard of several instances in this country, besides that of Mr. Grimm, where eggs laid by an apparently healthy queen did not hatch; and we have now a queen in our apiary which lays freely, though a majority of her eggs are not placed on the bottom of the cells, but on the side. Those so misplaced we suspect do not hatch, as the capped brood appears to be irregularly placed in the combs, and the population of the hive is certainly diminishing.

Mr. Marvin, of St. Charles, Illinois, had a queen last fall which laid eggs that did not hatch. She was unable to fly, and was probably unfertilized.

Milkpan vs. Honeypot.

To the class of popular prejudices against honey bees belongs the singular notion, prevalent among dairymen, that white clover, on whose blossoms those busy insects have been foraging, is less valuable as food for milch cows than it would otherwise have been; or that a herd will yield less milk, cream, and butter, in a white clover region stocked with bees, than in one in which no bees are kept. This conceit, we apprehend, is on a par with that of the fruit-growers, who imagine that bees injure blossoms and deteriorate crops.

The nectar of flowers is generally regarded as a *secretion* intended by nature to attract bees and other insects, to secure the fertilization of plants. Yet in reality it is an *excretion*, designed to rid the plant of superfluous matter by natural process. It is extruded and thrown off, because not needed, or no longer needed, for the growth and developement of the plant as a herbaceous or vegetable production; though, in this extruded condition, it still subserves the important purpose of reproduction, by securing fertilization, through the instrumentality of honey-loving and honey-gathering insects. But here its office or function ends, and whatever has not been gathered by the insect tribes, is almost immediately dissipated or dessicated. In some blossoms it is so exceedingly volatile that it evaporates early in the day, and bees are never seen exploring them after noon. What is not gathered to-day is lost; it cannot be gathered to-morrow. Still it is not *re-absorbed*. It does not re-enter the plant, and again form part of its substance. If, on drying, a minute portion of it may be supposed to remain on the nectary, the infinitessimally thin film of saccharine matter thus deposited, is speedily dissolved and washed away by dews and rain, or falls to the ground with the unfertilized blossoms. Precious little of it would find its way into the dairyman's milk pail, cream pot, or butter churn, though not a bee had ever existed, or the whole race were banished from the land by exasperated town meetings.

It is universally conceded that the white clover is a much more valuable forage plant for milch cows, than the red. Yet the latter loses, by insect abstraction, comparatively little of the saccharine element so abundantly secreted or excreted in the nectaries of its blossoms. Hence, on the dairymen's theory, it should, so far as the sweets of a honey-bearing herbage are concerned, be at least fifty-fold more valuable than the former. While a white clover patch in bloom is swarming and musical with honey bees, scarcely a few dozen "droning humlers" can be found on an acre of the red, though in full flower and redolent with sweet savor. If then the retention of the saccharine element so essentially conditions the value of the forage, as one of its milk producing constituents that the market price of cream and butter is affected by what the bees carry off, how comes it that the milk product of the non-deprived red clover is so greatly inferior, both in quality and quantity, to that of the incessantly despoiled white? Here is a fair test, open to every one anxious to search out the "secret things of nature." The facts, too, are so palpable and plain that even a Wenhamite of the two-thirds order might be expected to draw some pretty conclusive inferences from them.

Obviously the milk producing qualities of a plant do not depend on the retention or abstraction of the saccharine matter secreted or excreted in the nectary of the blossom. That is the mere excess—the foison—which the plant no longer needs. Whether the sun dries it up, or the rains wash it off, or the bees carry it away, the result is all the same in the milkpan—though, in default of the latter, the difference would be considerable in the hive and the honeypot.

[For the American Bee Journal.]

Patent Monopoly.—Langstroth's Hive.

I have rarely been more deeply interested in any article than in that which appears on page 219 of the present volume of the BEE JOURNAL, in relation to the hive invented by Mr. Langstroth. That he should now, after fourteen years faithful labor, be actually poorer than when he first began the work, does not speak well for the honesty of American bee-keepers. One thing that strikes me most forcibly is the seeming ignorance of most of the writers in the BEE JOURNAL in regard to the points in which we are indebted to Mr. Langstroth. I have examined the subject with a good deal of care, and am fully convinced that every man who uses comb frames constructed and arranged as in the Langstroth hive, is using that which does not belong to him. And yet we find men discussing the merits of different hives, and contrasting them with Langstroth's, while at the same time these very hives owe their most valuable feature to Langstroth's ingenuity. I know that differences of shape, material, and interior arrangement, may properly be the subject of discussion and comparison with Langstroth's form. But in this discussion we are too apt to forget that to Mr. Langstroth we owe that which is far more important than any mere form or arrangement. Take away from our bee-keepers the knowledge of the movable frames, and where would we be?

I have no pecuniary interest in the matter. I am not even personally acquainted with Mr. Langstroth. I speak in simple justice to a worthy man, to whom we all owe a deep debt not only of *gratitude* but of *cash*. Can we not afford to be honest?

JOHN PHIN,
Professor of Agriculture,
Pennsylvania Agricultural College.

The Spider and the Bee: or, look not on outward appearance.

A FABLE.

BY ELLEN ROBERTS.

It chanced a Spider and a Bee
Once settled on the self same tree,
And then began a warm debate
Which could the fairer work create.

The Spider boasted, none so well
Of geometric form could tell,
Or could so cunningly design
How squares with circles should combine.
She said the webs she daily wove
Her skill, in this respect, would prove;
And, farther, from her own slight frame
The silken threads to spin it came.
Whereas the honey of the Bee
Was stolen from each flower and tree;
Nay, that she was obliged, indeed,
To borrow from the humblest weed.

The Bee replied, she never thought
Such charge against her could be brought;
That as to stealing honey sweet
From every flower she chanced to meet,
Her skill was so conspicious here,
She'd nothing from such charge to fear.
So delicately she distill'd,
And her slight bag with honey fill'd,
That never had a flower complained
That by her means its juice was drained!
No leaf had been at any cost.
As to the webs the Spider spun,
Her combs as skilfully were done.
Indeed the merits of her cause
Might rest on mathematic laws;
For these were never disobey'd
In any hexagon she made.
But, what was chiefly on her side,
Her works were usefully applied;
She labor'd for the public good,
And stored her cells for winter's food.

Taught by this fable, let us aim
At virtue, rather than at fame;
Caught by no outward show or glare.
Appearances may promise fair;
The dazzling are not always bright,
But glitter with delusive light;
Let's estimate things by their use
Not the effect they can produce.

[For the American Bee Journal.]

Transferring Combs.

MR. EDITOR:—The following I find is a better way of transferring combs from box hives to frames, than any I have seen described.

Cut strips of thick and strong hardware paper, or such as paper flour bags are made of, and tack across the frames horizontally and vertically. Turn over the frame and adjust the comb in it; tack other strips across, and the work is done. The strips should be about half an inch wide. After using these once, no one will return to strings. JOHN M. PRICE.

BUFFALO GROVE, IOWA.

[For the American Bee Journal.]

Answer to Correspondent. No. 2.

Do bees injure the fruit crop by taking honey from the flowers?

A lady came to a neigboring bee-keeper's house and requested him to shut up his six stocks of bees, as they were taking the sweet out of the flowers, and *it made the currants sour!* When asked if she could prove them to be his bees, she replied of course they were his, as the hives were in the adjoining garden. The lady, with her little knowledge on the subject, did not think that the bees of my several hundred stocks could fly the distance of less than a mile, to rob her currant bushes of the sweets, and thus left *her* currants to grow sour. That is the theory also of the failure of fruit crops, grain, or seed, from the fancied bad effect of the removal of honey from the flowers.

I have grown seventy-five bushels of currants, twenty-five of gooseberries, and apples, pears, cherries, and all kind of fruit that can be grown here, in abundance; and the same year had six hundred and fifty stocks of bees within working distance of the fruit garden. I have not had an entire failure of the various kinds of fruit since I have kept bees. I have some seasons had large crops, while at other places on the prairies, with no buildings, trees, or streams of water, with few or no bees kept near, I have seen failures of fruit from various causes, such as cold dry winds, frosts, hot dry winds, "rotten root," "wet feet," (land not well drained), scales or bark lice, various kinds of aphides or plant lice, that suck the juices from the leaves, tender branches, fruit stems, buds and flowers, and eject a sweet liquid resembling honey, of which the bees are fond. I have seen large apple orchards on the bleak prairies that bore no fruit, or only at intervals, until the shelter belts of timber and hedges grew up. Now varieties bear often that were entire failures before such growth of protection. While some orchards bore fruit only on the east side rows in some seasons, in others the produce would only be on the south side rows. Why not say the bees gathered all the honey from the barren rows? The red clover yielded surplus honey for boxes the first time for twenty years, and also the largest crop of seed. The melilot clover yielded the largest crop of seed, and also honey, for several years. One year I saw the white clover in flower for fifteen days; but no bees were at work on it during that time, and *no seed was formed.* A change in the atmosphere gave a yield of honey, and in a few days the flowerets turned down with the growth and weight of seeds—of which each pod contained many. I have seen buckwheat that had been sown in the spring, and also such as was sown in the latter part of the summer, in flower for thirty days at a time, and no honey gathered or seed set. Yet a change in the atmosphere gave a yield of honey, and also of grain in proportion.

Can persons who think bees injure fruit, poison our bees?

I think not. Bees gather poisonous honey in some districts, but that has no injurious effect on themselves; yet it is injurious to man, unless the poison is removed by boiling or the use of chemicals.

Most bee-keepers can tell what their bees are at work on, and may track them to the poison dish, if such a thing could be done as to poison them. An enlightened neighborhood would not tolerate an ignorant and vicious person in their midst, who would attempt so wicked an act as to endanger the lives of the whole community, that might partake of the honey so stored, if it could be done. The proper remedy for such persons is, to educate them by lending or giving them books, or if they cannot read, practical lessons in fruit growing and bee-keeping. Get them to go to fruit growers' and bee-keepers' conferences; lend or give them a stock of bees; give them knowledge, as that will give them power to overcome their prejudices.

ST. CHARLES, ILL. JAS. M. MARVIN.

[For the American Bee Journal.]

Wintering Bees.

Last winter I placed twelve stocks of bees in a pit, as directed by Bidwell Brothers, in the *American Agriculturist Annual* for 1867. My soil being heavy, and not high enough to drain very thoroughly, I removed them as soon as spring began to open, and found them in good condition, though beginning to mould.

I am thinking of constructing a house for future use, with walls five or six inches apart, filled in with saw dust; and would be glad to know from those who have had experience in using such winter quarters, about how long in the spring bees can be kept in such a house without becoming too restless. If it were practicable, I would like to keep my bees housed until the appearance of fruit blossoms, and thus avoid the chilling winds which so surely follow the sunny days of March.

I would also like to hear further from Messrs. Bidwell Brothers, in regard to the feasibility of burying bees in heavy clay lands.

SELMA, OHIO. C. E. THORNE.

[For the American Bee Journal.]

Make of Hives.

Being a new hand in the bee-keeping business, I have became very much interested in the contents of the BEE JOURNAL and more particularly in the writings of E. Gallup and J. H. Thomas. I notice that they differ on three important points, to be considered by those just engaging in the business, viz: the size of the hive, the use of the slanting bottom boards, and fixed or equal distanced frames. Mr. Thomas advocates a hive of two thousand cubic inches comb capacity, the use of a slanting bottom board, and fixed frames. Mr. Gallup is in favor of a hive of greater capacity, and deprecates the use of the slanting bottom board and fixed frames. If these gentlemen would give their views more definitely on those points, through the BEE JOURNAL, they would confer a favor on more than one NEW BEGINNER.

DIAMOND LAKE, ILLS.

[For the American Bee Journal.]

How can we determine the amount of Honey in a field?

Bees in common swarming hives will generally double their numbers annually, until they demand the whole product of honey for their support. The doubling, or partial doubling, beyond this, carries them beyond their means of support. Some strong swarms will gather enough for winter, and a small amount of surplus. Some enough to go through the winter with some feeding. Others so weak that the moths get the start of them, and they perish. A number must be broken up, or starve to death.

Last year I had no luck with my bees. I never saw so poor a season. There was but very little honey in the flowers. I have hardly known a worse season.

Might not the keeper suppose that before this bad luck commences, he had measured the limits of his field; and thus limit the number of his colonies, if he would secure success? Suppose forty colonies had been the number fairly supplied, and above this number failure and bad luck attended him; would it not be proper to limit his number to forty colonies?

Might he not make this a basis of his estimate? Forty colonies at sixty pounds each, for winter consumption, and with the breeding season, will amount to two thousand four hundred pounds. My surplus was five hundred pounds. Whole amount collected by the bees two thousand nine hundred pounds. May he not enquire—I obtain five hundred pounds out of two thousand nine hundred pounds yield! A trifle more than one-sixth! Is there no way to do better than this?

Permit me, in answer to this, to refer to actual experiment. In 1866, I built four new hives, so constructed as to give box room for from one hundred and twenty-five pounds to one hundred and thirty pounds, in eighteen boxes. The four colonies in them in the season of 1867, gave four new swarms and five hundred pounds of surplus. At an estimate of sixty pounds per swarm for consumption, the eight old and new require four hundred and eighty pounds for home consumption and give five hundred pounds—or more than half—in surplus.

Put twelve colonies of bees in the last named hives, and you may secure nearly five hundred pounds—or more than half—in surplus. Can any one question whether it is best to be at the expense of twelve hives and obtain one thousand five hundred pounds of surplus honey; or of forty hives, and obtain only five hundred pounds. JASPER HAZEN.

ALBANY, N. Y.

Fertile workers are not usually very prolific, many of them scarcely laying an hundred eggs each in the course of their lives, when placed in the most favorable circumstances. The brood consequently is irregularly disposed of in the combs. But Berlepsch says he knows of one instance in which such a worker was highly prolific, the brood filling an entire comb, and being compactly placed in the cells.

[For the American Bee Journal.]

Artificial Swarms.

I have just received a circular from M. M. Baldridge, St. Charles, Illinois, in which, among other things, I find the prospectus of a book which Mr. Baldridge is about to issue, giving instructions about making artificial swarms, and securing straight combs in frame hives.

By these instructions "any person, even the novice, may divide a hive quickly and with safety; and, with one exception, without spending a moment's time in hunting the queen."

But, what about that "one exception," Mr. Baldridge? *Sometimes* exceptions are so frequent as to be hard to distinguish from the rule; and I would like to know how often this one is likely to occur. Quinby and King each give methods for making artificial swarms without hunting up the queen.

And I would also be glad to know whether you propose to give us a better way of producing straight combs, than the well-known and simple one of raising one end of the hive.

SELMA, OHIO. C. E. THORNE.

[For the American Bee Journal.]

Italian Bees and Red Clover.

MR. EDITOR:—In the December number, vol. 3, of the BEE JOURNAL, page 137, your correspondent "Bee-keeper" asks for "more light" on the subject of Italian bees working on the second crop of red clover.

My answer to Mr. McCune, vol. 3, page 58, seems to have satisfied *him;* but my answer is not entirely satisfactory to "Bee-keeper." This question is presented by him—"Are there any black bees in his (Mr. Langstroth's) neighborhood. ?" I reply—*there are!* and if my memory serves me aright, Messrs. L. & Son had just received a colony of black bees into their apiary a few days before I visited them, and had introduced an Italian queen bee into it.

I have yet to see the first native bee in this country work on red clover, and I had observed this fact before I ever heard of the Italian bee. And the fact of the Italians working freely on the bloom of the second crop of red clover, forever determines their superiority over the native bee.

This country abounds in luxuriant fields of red clover, the second crop of which is in full bloom just at the season when other flowers are failing, and weak colonies are enabled to gather a good supply of stores for winter use.

I am not yet satisfied of the superiority of the Italian over the native bee in many other points claimed by others; but think I will be enabled to determine after handling them another season.

If you find anything in these few remarks which will be of interest to bee-keepers, you can give it to the public. If not throw it aside with the rubbish. I am much pleased with your "JOURNAL," and would not be without it for three times its cost. G. B. LONG.

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